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REPORT ON THE QUALITY OF MARINE SURFACE OBSERVATIONS FOR THE PERIOD JULY TO DECEMBER 1998.

REPORT NO. 20

DATA ASSIMILATION,
METEOROLOGICAL OFFICE,
BRACKNELL.

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JULY TO DECEMBER 1998

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For further information on or copies of this report, please contact:

Manager of Observation Monitoring,
Room 343,
Meteorological Office,
London Road,
Bracknell,
Berkshire,
United Kingdom.
RG12 2SZ

E-mail: bmacpherson@meto.gov.uk

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REPORT ON THE QUALITY OF MARINE SURFACE OBSERVATIONS:

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1. INTRODUCTION

In 1985, the Commission for Basic Systems agreed that there was a need for GDPS / Global NWP centres to monitor the quality of observations available on the GTS and to exchange monthly lists of those stations providing observations which seem in error. In 1988 three lead centres were nominated which would have a co-ordinating role of producing, at 6-monthly intervals, consolidated lists of suspect stations for given data types together with information on the nature of the error. RSMC Bracknell was allocated the rôle as lead centre for marine surface observations which encompasses observations from ships, drifting buoys, moored buoys and other fixed marine platforms. This is the twentieth such report and covers the period July to December 1998.

Following the CBS recommendations, four centres have been active in exchanging monitoring information each month; RSMC Bracknell since August 1987, ECMWF since August 1988, RSMC Tokyo since September 1988 and NCEP Washington since August 1989. At first, the only monitoring information exchanged on marine surface observations was related to pressure, and the first two WMO reports were restricted to that parameter alone. All four centres now regularly monitor wind observations and such results are contained in this report. In addition, the report contains monitoring results for sea-surface temperature (SST). Due to changes which have been made to the observation processing system and database structure at Bracknell, however, there has been no monitoring of SST data at this centre since May 1998. For this reason, the SST information presented herein, has been compiled, with permission, from the monthly NCEP monitoring reports and is not, therefore, directly comparable with that in previous reports. It is hoped that this situation will be resolved in time for the inclusion of SST monitoring statistics from RSMC Bracknell in future reports, as of number 22.

For each marine observing platform which is identified as suspect, values are supplied for the number of observations received at each centre, the number of observations with gross errors, the mean differences from the background values used by the numerical data assimilation system and the standard deviations of these values.

2. MONITORING METHODS

Errors in observations may arise from a number of sources: the instrument may be malfunctioning, figures may be mistaken while being transferred manually, or there may be corruption of data during transmission. Errors can also arise in the pressure report if the adjustment to sea level is made incorrectly or not at all, and a poorly-sighted anemometer can result in errors in the observations of wind. For SST observations, the depth at which the observation is made can be crucial. "Surface" observations from buoys are usually made at a depth of around 0.5m, whereas ships may take a measurement between a depth of 10m and the surface, depending on the method used. At present, there is no indication given within the report of the observation's depth, so it is not possible to determine the significance of this factor. (By contrast, satellites measure the temperature of the ocean's "skin" which is generally slightly cooler than the temperature immediately beneath, by several tenths of a °C, as a result of evaporative cooling and other surface processes.) Some of these errors can be detected by applying checks on the code format and the internal consistency of the report (for example: are the position and pressure consistent with a report 6 hours earlier?). Checks on spatial consistency may be made if there are other nearby observations. However, such quality checks are unable to identify errors on all occasions and it is recognised that the numerical data assimilation systems in use today can provide global reference values which have a valuable application in the area of observation monitoring. The short-term forecast from the previous numerical analysis, commonly known as the first-guess or background field, provides perhaps the most useful information on observation quality, as it represents an

accurate and spatially consistent estimate of the observed value which is independent of the observation itself. Observation-minus-background (hereafter referred to as O-B) differences are at the centre of all monitoring work by GDPS centres. For sea-surface temperature, it has not, in previous reports, been possible to use a background field with which to compare the observed values, as is done for wind and pressure observations, since no forecast of SST is performed at Bracknell. Instead, the analysis field has been used, the slowly varying nature of SST, relative to parameters measured above the surface, making this a sufficiently good approximation. (These analyses are performed daily at RSMC Bracknell from an assimilation of both surface and satellite observations.) There is one drawback in using the analysis field as an alternative: it is not independent of the observations themselves. This is a major limitation when it comes to assessing observation quality since the results are not straightforward to interpret. Since, however, the SST information presented in this report is derived from the monthly NCEP monitoring reports, it is based on the O-B data therein.

Taking all marine surface observations together, the values of O-B have distinct characteristics. The vast majority of the observations show quite small departures from background and the distribution of O-B is nearly Gaussian, with little or no bias. The errors in the background field probably contribute most to the values of O-B for these observations. There is often, however, a smaller group of observations departing much more from the background, for which observation error is the only reasonable explanation for the large values of O-B. Studies of the distribution of O-B and its variation at different points around the globe enable reasonably accurate estimates of background error to be made, and this provides the basis for the monitoring methods described here. Those marine observing platforms for which, in a sufficiently large sample, the observed values of pressure or wind differ from the background by an amount significantly in excess of the estimate of background error, may be labelled as suspect with a high degree of confidence. The limits used here to identify suspect observing platforms have been set sufficiently stringent to preclude much likelihood of the background, rather than the observations, being in error.

Each monitoring centre produces a monthly list of the identifiers of marine observing platforms considered suspect according to the departure from the centre's background values. All observations, both synoptic and asynoptic, are assimilated. At Bracknell, Tokyo and Washington, the corresponding background value used is that valid at the nearest main synoptic hour. At ECMWF, however, interpolation in time is performed.

Given that the number of observations made during the month is greater than or equal to 20, then the condition used by all centres for obtaining platforms for the suspect lists is that at least one of the following criteria are satisfied:

Pressure

1. the $\lvert$ mean of O-B $\rvert$	$\geq$ 4.0 hPa	
2. the standard deviation of O-B	$\geq$ 6.0 hPa	
3. the percentage of gross errors	$\geq$ 25	

Wind

1. the $\lvert$ mean of O-B $\rvert$	$\geq$ 5.0 ms^{-1}	(Speed)
	$\geq$ 30°	(Direction)
2. the standard deviation of O-B	$\geq$ 80°	(Direction)
3. the percentage of gross errors	$\geq$ 25	

A gross error is defined as an observation which departs from the background by more than 15hPa (Pressure) or 25ms^{-1} (Vector Wind). The mean and standard deviation of the samples are evaluated excluding gross errors and in this way occasional "wild" values resulting from, for example, corruption during transmission, do not influence the sample characteristics. Direction statistics are also calculated excluding values in light winds, where either the observed or background speed is less than 5ms^{-1}.

Relatively little information is exchanged between centres on a regular monthly basis for SST.

The monthly results for pressure from all four monitoring centres show considerable agreement, both on the observing platforms listed as suspect and the values of the mean and rms difference from each centre's background. Differences between the monthly suspect lists are usually due to the different numbers of observations available at each centre. The cut-off varies between 6 and 24 hours. There are also some unexplained variations in the data receipt between the centres, which may be due to problems in the GTS or in the local procedures for handling the data. Monitoring results for wind speed also show reasonable agreement on the mean and standard deviation from each centre's background; there is less agreement as to which platforms are listed, reflecting the greater uncertainty when monitoring wind speed.

This report draws together all the monthly monitoring results exchanged on marine surface data and identifies a list of observing platforms which have provided observations of poor quality over the 6-month period. In drawing up this list, there have been a number of guiding principles:

1. As with the monthly lists, accuracy is assessed relative to background values.
2. Only those observing platforms are listed for which there is a very high degree of confidence that the observations rather than the background values are in error.
3. At least 40 reports are required over the period in which the observations are considered suspect.
4. The perceived accuracy over the last part of the six-month period is of greatest importance; observing platforms will not be listed if there has been recent improvement and their reports are at present without major error.
5. Given that the number of observations made during the period is greater than or equal to 40, then the condition for listing a platform as suspect in this report is that at least one of the following criteria are satisfied:

Pressure

1. the | mean of O-B |	$\geq$ 3.5 hPa
2. the standard deviation of O-B	$\geq$ 5.0 hPa
3. the percentage of gross errors	$\geq$ 25

Wind

1. the | mean of O-B |	$\geq$ 5.0 ms^{-1}	(Speed)
	$\geq$ 30°	(Direction)
2. the standard deviation of O-B	$\geq$ 6.0 ms^{-1}	(Speed)
	$\geq$ 60°	(Direction)
3. the percentage of gross errors	$\geq$ 25	

SST

1. the | mean of O-B |	> 4.0°C
2. the standard deviation of O-B	> 6.0°C
3. the percentage of gross errors	$\geq$ 25

All observations having gross errors are excluded from the calculation of the mean and standard deviation of O-B. The same gross error limits apply in these reports as in the monthly lists. RSMC Bracknell normally set a limit of 5°C for SST, although this does not apply to the data presented in this report since the monthly statistics from NCEP are based on a limit of 15°C. This is one of the reasons why this data is not directly comparable with that presented in previous reports. Additionally, the criteria previously used by RSMC Bracknell for these reports have been based on RMS O-A and gross errors only. Aside from this, even if the same monitoring methods were used

at Bracknell and NCEP, there would always be a risk associated with treating the results obtained using different models as comparable.

The limits set on the bias and standard deviation of O-B are slightly less stringent than those for the monthly lists because the sample sizes are larger. They are only applied over the last part of the period if there has been a recent deterioration in quality. It is possible that there are a few observing platforms listed in this report which have not appeared on any of the monthly lists. This can occur if they report infrequently and only produce a large enough sample over a period of several months. The 6-month list is longer than most of the monthly lists because many ships cease reporting for variable periods of time, presumably in most cases while they are in port or out of service. Only over a relatively long period, probably more than 6 months, is a representative sample obtained from all those ships providing observations.

3. MONITORING RESULTS

The monitoring results presented in this report relate only to data exchanged over the GTS. Observations from marine platforms are transmitted in one of two formats: the SHIP code, used for most observations from ships, moored buoys and other fixed platforms, and the BUOY code, used mostly for observations from drifting buoys. In this report the term "ship observations" refers to those received in the SHIP code and the "drifting buoy observations" to those received in BUOY code. The SHIP code indicates whether the observation was made manually or by an automatic system and accordingly the sub-divisions "manual ship" and "automatic ship" will be defined.

N.B. During the period of this report there has been no monitoring of SST data at RSMC Bracknell although SST information is presented, with permission, which relates to the monthly monitoring reports from NCEP. This situation has arisen due to the changes which have been made in the observation processing system at Bracknell and the consequent changes to the databases used for monitoring. It is now hoped that the monitoring of SST data will, in some capacity, be resumed during the period July to December 1999.

3.1 Pressure

In the six month period, July to December 1998, 1,641,100 observations of pressure were monitored at Bracknell from 5300 manual ships, 365 drifting buoys, and 313 automatic ships. The number of reports received from individual ships varies greatly as Table 1 demonstrates; apparently, a large percentage only report once. The reason for this is unclear but it may be a result of errors in the part of the message giving the ship identifier. A comparison with the corresponding table in report number 19 shows the number of manual and automatic ship identifiers to have increased, although this is partly due to the shorter (five month) period used in the generation of the figures for that report. Since most marine observations are located in the northern hemisphere, there is inevitably some seasonal variation in the number of vessels reporting, especially in the case of buoys, since new or replacement buoys are generally deployed in better weather conditions. Despite this, by considering the general trends over the previous four reports, an overall drop in the numbers of all three identifier types is evident. Over this extended period, numbers have fallen from their peak values by approximately 10% for manual ships, 30% for automatic ships and 35% for drifting buoys.

Table 2 shows the number of observations of pressure that have been received over the GTS at Bracknell and processed, over past 6-month periods. Due to changes in data storage methods at Bracknell in May 1991, report number 5 covered the period January to May 1991 only, thence figures for January to June 1991 have been scaled-up in order to make a fair comparison with other 6-month periods; this may not be entirely accurate. Further changes in November 1993 for drifting buoys and automatic ships for pressure and winds, may have allowed duplication of a few identifiers in Table 1 for the period June to December 1993, as reclassification from one observation type to another occurred. The observation distribution shown in Table 2 will also have been affected in the long term with a slight shift towards drifting buoys; no duplication of observations occurred however. SST observations were not affected by the November 1993 change. The period January to June 1998 is also based on only 5 months data (February-June), but the numbers of observations received have been scaled up, as in the 1991 case.

Figure 1 shows the information presented in Table 2 more clearly. It can be seen that the total number of observations remained fairly steady with only minor fluctuations until report number 11 (January-June 1994). Since that time however, there has been a steady increase in the total, with the number of observations of pressure nearly doubling between reports 11 and 16 (July-December 1996), a period of just 2.5 years. This increase was due to the increase in the number of reports from each drifting buoy, as reliability has improved; many drifting buoys now make over 2,000 pressure observations during a 6-month period. The number of reports from drifting buoys now exceeds those for manual ships by around 60%, with a little under half of all marine pressure observations now being made by drifting buoys. The sudden increase seen in the

number of automatic ships in report number 19 (January-June 1998) was due to observation processing changes at Bracknell, whereby all reports from 'automatic ships' are processed, rather than only one report per 6-hour assimilation period, as previously.

A histogram of O-B differences for all ship pressure reports in the period July to December 1998 is shown in Figure 2a, together with the Gaussian distribution with the same mean and standard deviation. Although almost all values fall within the range +5 to -5 hPa, a small number of much larger values, presumably resulting from erroneous observations, contribute to the large standard deviation of the population. The distribution for all those observations which fail the automatic quality-control checks is broad (Figure 2b). The remaining 96 per cent of the observations which pass the quality checks show a distribution of O-B which is very close to Gaussian (Figure 2c) with mean -0.2 hPa and standard deviation 1.5 hPa; the principal contribution to the standard deviation is assumed to be from background errors.

A global estimate of the background error, such as that provided above, will conceal large spatial variations which may occur. Background values will be more accurate in data-rich areas (e.g.: in the North Sea or Mediterranean) or where the meteorological variability is low (e.g.: the tropics). The geographical distributions of the mean and standard deviation of the values of O-B from all ship observations which pass the quality-control checks, have been calculated for 10-degree latitude-longitude boxes and are plotted in Figures 3 and 4. In most areas the magnitude of the mean is less than 0.5 hPa, the exceptions being generally where the sample size is small. The standard deviation is generally around 1.5 hPa, but larger in the southern oceans, around 2.5 hPa. The number of ship pressure reports accepted by the model quality control in each 10-degree box is shown in Figure 5.

Table 3 contains a list of those ships and drifting buoys considered to have produced suspect observations of pressure in the period July to December 1998. Values over the six month period are given for the number of observations of pressure available for the Bracknell global model runs, the number of observations differing from the background value by more than 15 hPa (gross errors), and the mean and standard deviation of O-B using the Bracknell global model. The number of times the identifier has appeared on the monthly suspect lists from the four monitoring centres is also given. In order to give a detailed picture of the frequency of reporting and any changes in the observation accuracy, 6-month time-series of O-B differences are given at the end of the report for each of the identifiers listed.

An interesting characteristic of the errors identified here, which soon becomes obvious on inspection of the time-series charts at the end of this report, is that the majority can be attributed to a bias in the observed pressure. In many cases the bias is constant over the whole monitoring period. There are some values which appear to depart greatly from the sample mean, presumably due to some gross error in the observation, but generally they are isolated instances. In only a few cases are there regular large random departures from background. Those observing platforms listed in Table 3 which appeared in the nineteenth report (January to June 1998) have been indicated with an asterisk. A comparison of the statistics given here with those in the eighteenth report (July to December 1997), clearly indicates that the bias in the pressure observations from a few ships has hardly changed for more than a year.

Statistics for those marine observing platforms which were listed in the nineteenth biannual report and which do not appear in Table 3b, are given in Table 4 along with comments on the quality of their pressure observations. Time-series charts of the pressure observations from these platforms are not given. Less than 40 reports were received in the 6-month period for a majority of the ships on this list. However, approximately 40% of the ships show some improvement in the quality of their observations.

3.2 Wind

The monitoring of observations of wind, presents more problems than for pressure. On the majority of observing platforms, wind is measured using anemometers. The reported speed will be dependent on the averaging period and the height of the instrument above sea level, which will vary a great deal from platform to platform. The wind flow is distorted by a large structure and factors affecting the wind measurement will also include the siting of the anemometer and the bearing of the wind with respect to the structure. Not all winds are measured by anemometers; observations from some ships are based on visual estimates of the sea state and in these cases the factors outlined above do not apply.

In the monitoring results presented here, the background winds are valid at a height of 10 metres above mean sea-level, a little lower than the average height of a ship anemometer. Where the anemometer height is much different from the reference height, a significant O-B speed bias may be introduced. This will be the case, for example, for observations from oil rigs or tankers with an anemometer height of 50m or more, or from buoys where the anemometer can be as low as 2m.

In the period July to December 1998, 1,387,203 observations of wind were available for monitoring at Bracknell from 4978 manual ships, 148 drifting buoys, and 384 automatic ships. A more detailed breakdown is given in Table 1. By examining the numbers of each type of observation, over the period of the previous four reports, it is evident that trends can be identified for manual ships and drifting buoys; the number of manual ships has decreased by 5% from its peak value and the number of drifting buoys is increasing, due to a larger proportion of newly deployed buoys carrying anemometers. As stated with regard to pressure reports, the large increase in number of observations which has become evident since report number eighteen, is largely due to the inclusion of all 'automatic ship' data, instead of just one report in each 6-hour period. Histograms of O-B differences for ship observations of wind speed are presented in Figures 2d to 2f and of wind direction in Figures 2g to 2j. As with observations of pressure, those wind observations which fail the quality-control checks differ most from background, some by as much as 40ms^{-1}, and they make a large contribution to the variance of O-B. The distributions of O-B wind speed and direction for the remaining 90 per cent of the observations are nearly Gaussian. There is a speed bias of +1.0ms^{-1} relative to background, with a direction bias of just -1.4°.

Figures 6 and 7 show the geographical distributions over the six month period of the mean and standard deviation of O-B for ship observations of wind speed which pass the quality-control checks. The numbers of wind reports used to generate these statistics are presented in Figure 8. The standard deviation of O-B wind speed is typically 2.5 to 4ms^{-1} in middle latitudes and 2 to 3ms^{-1} in the tropics. The bias is generally around +1ms^{-1}, but exceeds +2ms^{-1} in a few places. Similar distributions of the mean and standard deviation of O-B wind direction are shown in Figures 9 and 10. Only reports where both the observed and background wind speeds are greater than 5ms^{-1} were used to obtain these values. The magnitude of the bias is less than 10 degrees in most places. The standard deviation is generally between 20 and 30 degrees globally, but in some data-sparse areas it is as large as 40 or 50 degrees. The numbers of reports of wind direction used to generate these statistics are presented in Figure 11.

Figures 6-11 provide reference values against which the characteristics of O-B for different marine observing platforms may be compared. Table 5 contains a list of those ships and drifting buoys considered to have produced suspect observations of wind speed in the period July to December 1998, and in Table 7 a similar list is provided for wind direction. Values are given for the number of observations of wind received at Bracknell, the number of observations having a vector difference from background of more than 25ms^{-1} (gross errors), and the mean and standard deviation of O-B. Time-series of O-B for each identifier listed are given at the end of the report. In most cases of suspect speed observations, a constant bias is clearly evident. Errors in observations of direction are more random in nature. Tables 6 and 8 contain statistics for platforms which are not included in Tables 5 and 7 but that were listed in the previous 6-month report, for wind speed and direction respectively. Time-series plots for these identifiers are not included in this report.

3.3 Sea-surface temperature

Since there has been no monitoring of SST observations at Bracknell during the period covered by this report, the results presented here, derived, with permission, from the monthly suspect lists published by NCEP, are much less comprehensive than those in previous reports. It has not been possible, for instance, to identify how many observations of SST have been received over the GTS or how many of each observation platform type have been operational during the period (as indicated in Table 1). Usually, however, drifting buoys provide a substantial proportion of the total number of SST observations received, despite their numbers being relatively low. This is due to the frequency of buoy observations; hourly in many cases, with ships tending to report only at the main synoptic hours.

It has not been possible to produce any of the figures normally used to represent SST statistics; observation numbers, mean O-A, standard deviation O-A. These typically show overall biases of small magnitude ($\leq 0.1°C$) for all observation types. It is usually the case that ship observations have a standard deviation O-A which is approximately double that for both fixed and drifting buoys. This is partly due to both the frequency of buoy reports, relative to those from ships, and their quasi-constant location, giving them increased weight in the analysed field. As a result of the small number of SST observations at high latitudes and hence, particularly in the southern hemisphere, the decreased reliability of the analysis, the largest O-A biases tend to occur in these areas. (The coverage provided by drifting buoys is extensive, the exception being tropical areas of the Atlantic, and the polar regions. Fixed buoys, however, tend to be largely concentrated in coastal regions, with particularly high observation densities around the UK and the USA, as well as Japan and Hawaii.)

Table 9 contains a list of the ships and drifting buoys considered to have produced suspect observations over the 6-month period. The comments given in each case provide an indication of the main reason for the station to be listed as suspect; for the reasons mentioned previously, time-series charts for SST have not been included in this report. The majority of the identifiers appearing on the list do so as a result of bias. The normal form of Table 10, giving details of the performance over the latest 6-month period of the ships which were listed as suspect in the previous report but which do not appear in Table 9, has not been used since this would not result in a meaningful comparison, due to the significant differences in the monitoring methods used here and in report number nineteen. Instead, Table 10 has been used to list the identifiers, listed as suspect in the monthly NCEP report for December 1998, for which there is insufficient information to make a judgement as to the quality of the observations over a longer period.

4. SUMMARY

75 marine observing platforms are listed as producing suspect observations of pressure over the period July to December 1998, and 45 as producing suspect wind observations. 58 platforms are listed as producing suspect SST observations, as assessed from the monthly NCEP monitoring reports. The first report issued by RSMC Bracknell for the period January to June 1989, listed 150 marine platforms producing suspect observations of pressure. With the selection criteria remaining unchanged since then, an initial reduction in the number of platforms listed as suspect has been followed by a series of reports listing similar numbers of suspects. This still, however, seems to reflect a overall improvement in observation quality, when considered alongside the large increases, over the same period, in the number of observations monitored for each report. Although this report seems to identify a larger than usual number of observing platforms producing suspect wind observations, this still represents only 1% of the total number of operational observing platforms which report wind data.

The most common characteristic of the pressure errors found here is a bias in the reported pressure which may remain constant for many months. The majority of platforms listed as producing suspect wind observations show a bias in the reported wind speed, while a few show a large standard deviation in wind direction. For sea-surface temperature observations, the presence of bias is again found to be the most common cause of error.

The selection criteria have been set sufficiently stringent to ensure that the platforms listed are only those for which there is a high degree of confidence in their reports having errors. There are a great many others, not listed here, for which there must be considerable doubt over the quality of the observations. A wider range of monitoring results are available from Bracknell on request.

TABLE 1: FREQUENCY DISTRIBUTION OF THE NUMBER OF REPORTS OF PRESSURE, WIND AND SEA SURFACE TEMPERATURE FROM INDIVIDUAL IDENTIFIERS AVAILABLE FOR MONITORING AT BRACKNELL, JULY TO DECEMBER 1998.

Number of reports	Number of manual ships reporting			Number of drifting buoys reporting			Number of automatic ships reporting		
	Press	Wind	SST	Press	Wind	SST	Press	Wind	SST*
1	2208	1142	-	33	22	-	204	143	-
2-10	678	1254	-	20	41	-	20	100	-
11-20	229	222	-	18	10	-	1	3	-
21-40	334	314	-	13	14	-	3	1	-
41-100	637	597	-	16	7	-	8	8	-
101-200	604	572	-	11	4	-	6	10	-
201-500	536	722	-	62	15	-	16	32	-
501-1000	46	117	-	79	6	-	22	61	-
1001-1500	24	19	-	79	11	-	29	8	-
1501 +	4	19	-	34	18	-	4	18	-
Total	5300	4978	-	365	148	-	313	384	-
(Report 19)	*(4868)*	*(4668)*	*(4046)*	*(407)*	*(139)*	*(801)*	*(246)*	*(314)*	*(332)*

* numbers are for automatic (fixed) buoys only

TABLE 2: NUMBER OF OBSERVATIONS OF PRESSURE RECEIVED AT BRACKNELL ON THE GTS FOR EACH OF THE SIX-MONTH PERIODS COVERED BY THE WMO REPORTS ON THE QUALITY OF MARINE OBSERVATIONS

Period	WMO report number	Number of Observations			
		Manual ships	Drifting buoys	Automatic ships	Total
Jan-Jun 1989	1	424087	174971	40082	639140
Jul-Dec 1989	2	421315	151972	58016	631303
Jan-Jun 1990	3	424335	177927	63847	666109
Jul-Dec 1990	4	412430	205488	71146	689064
Jan-Jun 1991	5	364760	177069	64401	606230
Jul-Dec 1991	6	348710	148604	68456	565770
Jan-Jun 1992	7	332443	216872	73893	623208
Jul-Dec 1992	8	336958	247873	80862	665693
Jan-Jun 1993	9	340293	288208	77317	705818
Jul-Dec 1993	10	348082	316261	88650	752993
Jan-Jun 1994	11	334134	279963	111928	726025
Jul-Dec 1994	12	383760	305618	142468	831846
Jan-Jun 1995	13	369781	407111	124537	901429
Jul-Dec 1995	14	394016	528938	138653	1061607
Jan-Jun 1996	15	430162	566035	122909	1119106
Jul-Dec 1996	16	477928	621869	133221	1233018
Jan-Jun 1997	17	446530	623835	122178	1192543
Jul-Dec 1997	18	453399	684292	140227	1277918
Jan-Jun 1998	19	426622	700743	423217	1550582
Jul-Dec 1998	20	443548	700239	497313	1641100

TABLE 3: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT PRESSURE OBSERVATIONS OVER THE PERIOD JULY TO DECEMBER 1998.

Column 1 Call sign or identifier.

Column 2 Number of pressure observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.

Column 3 Number of pressure observations differing by more than 15 hPa from background (gross error).

Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.

Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.

Columns 6-9 Number of times observing platform has appeared on suspect lists. B=Bracknell, E=ECMWF, T=Tokyo, W=Washington.

Column 10 Comments on quality of pressure observations.

Notes:

1. Units are hPa.
2. Observing platforms marked with an asterisk were listed in the previous report (January to June 1998)

Table 3a: Platforms reporting in BUOY code

*i): Platforms **non-operational** at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
17511 *	80	0	1.5	-8.7	1	1	1	1	Bias
21627	370	0	4.8	-5.5	2	2	1	2	Bias
23928	138	1	1.9	10.2	1	1	1	0	Bias
31529	214	0	4.4	-7.2	1	1	1	1	Bias
33947	698	16	6.1	0.8	2	2	2	1	Standard Deviation
46559	789	0	2	-4.5	2	3	3	2	Bias Drift; -7.3 hPa October
46624	933	0	1.5	-3.1	2	2	1	2	Bias Drift; -5.4 hPa November
46922	2052	0	2.8	2.3	2	2	1	2	Bias Erratic; 4.4 hPa November
46960	571	0	3.2	-6.1	2	2	2	3	Bias Drift; -10.4 hPa September
47601	3172	540	4.4	-0.1	2	2	0	0	Gross Errors from September
48576	684	224	3.5	1.9	2	2	0	0	Bias, Gross Errors from August
54927	240	160	5.7	-6.1	2	2	1	2	Gross Errors, Bias
56531	265	42	5.1	-1.4	1	2	0	1	Standard Deviation
66512	626	320	3.4	-10.2	1	2	2	2	Gross Errors, Bias

*ii): Platforms **operational** at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
29746	2967	50	3.3	1.8	1	2	2	1	Bias Drift; 8 hPa December
31948	114	114	***	***	1	1	0	0	Gross Errors
33538	420	24	4.2	4.8	1	1	1	1	Bias
46767	973	68	4.4	3.2	1	1	1	1	Bias Drift; 9.1 hPa December
46768	3257	40	2.7	1.4	1	0	0	0	Bias Erratic; 4.4 hPa December
46907	3782	9	2.3	2.1	1	1	0	0	Bias Drift; 5.5 hPa December
62517	2010	58	3.6	1.7	0	1	1	1	Bias Erratic; 5.5 hPa December
62518	1272	370	2.7	1.1	1	1	1	1	Gross Errors
64563	3986	70	1.3	-0.4	1	1	0	1	Gross Errors from December

Table 3b: Platforms reporting in SHIP code

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
CTHI	61	53	4.0	-10.3	1	2	1	2	Gross Errors, Bias
CYLX *	60	46	0.6	-13.4	1	0	0	3	Gross Errors, Bias
C6CU6	57	14	4.7	-5.3	1	1	1	1	Bias from October
C6KF8	447	0	2.2	0.4	0	1	1	1	Bias from December
DUWH *	212	0	1.2	-4.5	2	2	0	1	Bias
ELRT5	91	39	5.9	11.9	2	0	0	0	Gross Errors, Bias
ELTE8	59	0	1.4	-3.5	0	0	0	0	Bias
ELTP9	54	0	1.4	3.8	1	0	0	0	Bias
ELTX5	157	1	1.5	4.5	2	2	2	2	Bias from November
FHZI	61	0	2.8	-3.7	1	0	0	2	Bias
FZOP	399	3	2.8	0.1	0	0	0	0	Std. Deviation from November
LAWR2	104	0	1.8	3.5	0	0	0	0	Bias
LAXP4	56	0	1.9	-4.4	1	0	0	1	Bias
OVLP	55	18	2.6	1.0	1	0	0	1	Gross Errors
PCCZ *	87	1	1.3	5.2	2	2	1	3	Bias
PCEX *	78	0	2.2	7.4	2	2	1	2	Bias
PEXX	161	0	1.6	-4.1	2	2	1	2	Bias
PFSK	112	0	2.0	-4.3	2	2	2	3	Bias
P3YS5	411	0	2.6	3.8	3	3	3	3	Bias
UCJM	119	15	3.1	0.2	1	1	1	1	Gross Errors from December
UCMR	148	30	3.3	0.4	2	2	2	2	Gross Errors from November
UDTH	133	1	1.7	-3.7	2	2	0	2	Bias
UDVB	44	5	6.5	-2.9	0	0	2	0	Standard Deviation
UFJJ	53	1	2.4	-5.4	1	1	1	1	Bias
UHRT	62	8	5.2	2.0	0	0	0	0	Standard Deviation

Continued →

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
UHVW	66	0	1.5	4.3	0	0	0	0	Bias
UIAG	45	6	3.5	-10.7	1	1	1	1	Bias
UICO	105	5	6.5	-4.0	1	1	1	1	Bias from November
UIKI	359	0	1.6	1.2	0	0	0	0	Bias drift; 3.5 hPa December
UITJ	84	1	1.0	-11.4	1	1	0	2	Bias
UYPO	62	0	1.8	6.2	2	2	0	2	Bias
VCJM *	65	64	0.0	0.6	1	1	0	1	Gross Errors
VCTV *	151	57	6.2	1.7	3	2	0	3	Gross Errors, Std. Deviation
VGDT	44	0	1.3	-4.8	0	0	0	0	Bias
VGJC	81	40	6.0	-6.1	1	0	0	1	Gross Errors, Bias
VGKM *	97	63	4.8	-6.8	3	0	0	3	Gross Errors, Bias
VRUS7 *	61	0	2.3	8.2	1	1	3	1	Bias
VRVI2	191	2	1.4	5.2	4	5	4	4	Bias
VVKJ	58	1	4.0	6.6	1	1	1	2	Bias
V2XO *	285	0	2.7	-3.1	1	0	0	1	Bias Drift; -3.5 hPa December
WCV7620 *	184	0	1.5	5.3	6	0	1	4	Bias
WDZB *	280	0	1.4	-5.8	6	4	6	6	Bias
WDZG	158	1	1.3	-4.1	2	0	3	3	Bias
WQZ9670	427	1	3.0	-2.9	2	0	2	2	Bias from November
3FGN3 *	114	5	1.8	-6.2	2	5	6	5	Bias
3FGQ3	199	0	1.3	8.7	4	4	4	4	Bias
3FKZ3	93	1	2.4	-3.4	0	0	1	1	Bias from November
3FOW4	293	0	1.7	3.9	4	5	5	5	Bias
3FPB6	110	0	1.6	-4.5	3	2	3	4	Bias
31497	119	119	***	***	1	0	0	0	Gross Errors
9MCM	188	0	1.6	3.4	1	2	0	1	Bias from November
9VPK	47	0	1.5	9.0	0	0	0	0	Bias

TABLE 4: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 3 BUT LISTED AS SUSPECT OVER THE PERIOD JANUARY TO JUNE 1998.

Column 1 Call sign or identifier.

Column 2 Number of pressure observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.

Column 3 Number of pressure observations differing by more than 15 hPa from background (gross error).

Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.

Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.

Column 6 Comments on quality of pressure observations.

Notes: 1. Units are hPa.

Ident.	N Obs.	NGE	SD	Bias	Comments
C6BJ9	0				No Reports
C6FA6	127	0	3.1	-1.6	Bias Reduced in October
C6HQ05	0				No Reports
C6HQ06	0				No Reports
C6IL3	1	0	0	5.5	Less than 40 reports
ELTE6	2	0	1.1	-2.6	Less than 40 reports
ELTQ9	129	0	2	3.3	Bias reduced in October
ELUB5	359	2	4.7	3.0	Standard deviation reduced
KSLB	0				No reports
LAXP	0				No reports
MVQN	27	0	1.2	-2.0	Less than 40 reports, Bias reduced in August
MVQN8	154	6	3.0	2.3	Bias reduced in August
MWZD2					
MXYR3	0				No reports
OXPW	55	0	3.5	1.6	Bias reduced in September
PCBU	34	1	1.2	10.9	Less than 40 reports, Bias persists
PEUQ	52	0	3.1	-1.6	Bias reduced in August
UAMS	69	5	1.8	-2.8	Bias reduced
UAMY	6	1	-.8	-0.2	Less then 40 reports
UCAC	10	0	0.5	5.6	Less than 40 reports, Bias persists
UCJR	115	0	1.9	3.5	Bias reduced in October
UCUF	38	0	3.1	6.4	Less than 40 reports, Bias persists
UDYN	93	1	4.2	-0.5	SD reduced
UJNC	13	0	2.7	1.5	Less than 40 reports, Bias reduced
UQDB	0				No reports

Continued →

Ident.	N Obs.	NGE	SD	Bias	Comments
USIS	0				No reports
VCPK	65	13	3.6	-1.9	Fewer gross errors
VGMV	25	12	3.9	3.3	Less than 40 reports, Gross errors persist
VTCND	17	1	3.9	-6.9	Less than 40 reports, Bias persists
VVGG	34	1	1.7	6.0	Less than 40 reports, Bias persists
V7AS7	0				No reports
V7AW8	3	0	0.6	3.0	Less than 40 reports
WFLH	319	0	1.7	-3.1	Bias reduced in December
WRGL	8	0	1.0	6.8	Less than 40 reports
XLW363	109	11	4.3	0.3	Bias reduced in August
XYKX	37	0	3.3	-0.2	Less than 40 reports, Fewer gross errors
3FTJ4	0				No reports
3FUD4	77	0	2.2	-0.9	Bias reduced in August
3FUQ7	90	0	4.3	3.3	Bias reduced in November
9VHU	30	0	0.9	7.1	Less than 40 reports, Bias persists
9VIH	8	0	3.1	-0.7	Less than 40 reports
9WCR3	40	0	3.3	-2.1	Bias reduced from September

TABLE 5: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT WIND SPEED OBSERVATIONS OVER THE PERIOD JULY TO DECEMBER 1998.

Column 1 Call sign or identifier.

Column 2 Number of wind speed observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.

Column 3 Number of wind observations with vector difference from background of more than 25ms^{-1} (gross error).

Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.

Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.

Columns 6-9 Number of times observing platform has appeared on suspect lists. B=Bracknell, E=ECMWF, T=Tokyo, W=Washington.

Column 10 Comments on quality of wind speed observations.

Notes:

1. Units are ms^{-1}.
2. Observing platforms marked with an asterisk were listed in the previous report (January to June 1998)

Table 5a: Platforms reporting in BUOY code

*i): Platforms **non-operational** at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
41626	910	0	2.3	-1.6	1	0	0	0	Bias Drift; -8.8 ms^{-1} December

*ii): Platforms **operational** at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
21531	1512	0	2.7	-4.8	3	1	1	2	Bias Drift; -7.1 ms^{-1} December

Table 5b: Platforms reporting in SHIP code

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
A9DG	51	0	6.5	7.5	1	1	1	1	Standard Deviation, Bias
C6KE3	202	25	5.3	4.7	2	4	2	3	Gross Errors from November
C6LQ3	155	3	6.3	4.8	2	2	0	1	SD, Bias from November
C6NI3	95	1	5.3	4.9	1	1	0	0	Bias from November
DATG	169	2	5.8	5.3	3	3	2	2	Bias
DGOL	65	0	9.2	7.0	2	0	0	0	Bias, Standard Deviation
DHHO	80	4	7.0	3.2	0	0	1	0	Std. Deviation from December
DPRH	48	0	6.3	6.6	1	0	1	0	Bias, Standard Deviation
DZFF	72	1	2.3	6.3	1	1	1	1	Bias
ELGG3	94	5	7.4	5.2	2	2	1	2	Bias Erratic
ELJH9	73	2	4.6	4.7	1	1	1	0	Bias; 5.1 ms^{-1} December
ELNK8	70	1	4.2	8.1	2	2	2	0	Standard Deviation
FNRV	66	1	6.1	5.2	1	1	0	0	Bias, Standard Deviation
GFWX	273	0	4.7	2.9	1	1	1	0	Bias and SD from December
OUEK	263	11	7.0	6.7	4	1	3	2	Bias, Standard Deviation
OYCZ *	65	14	8.3	10.6	2	2	2	2	Bias, Standard Deviation
PCCZ	101	0	5.9	6.3	2	3	1	2	Bias and SD from November
PDTW	105	0	6.4	3.7	0	1	1	0	Std. Deviation from October
PJED	110	0	6.2	3.5	1	1	1	0	Bias and SD from December
PJMJ	138	0	4.5	1.2	0	0	0	0	Std. Deviation from December
PJOX *	288	5	4.8	7.7	6	6	6	6	Bias, SD from December
S6DH	60	0	4.7	5.3	1	2	1	1	Bias
3FDO6	45	31	10.9	-6.6	1	1	0	1	Gross Errors
63113	307	0	4.6	-0.2	1	1	0	0	Std. Deviation from December
64045	4042	1	3.6	-1.5	1	0	0	1	Bias Drift; -6.0 ms^{-1} December
9KKF	205	1	4.7	2.6	1	0	0	0	Bias from October
9MBK	40	0	5.2	7.3	1	0	0	1	Bias
9MBK8	72	1	5.9	7.6	3	1	1	1	Bias
9MBQ4	77	0	3.9	3.9	1	1	1	1	Bias from December
9MUG	133	6	6.1	5.5	2	1	2	2	Bias and Standard Deviation
9VMY	136	3	6.6	3.4	1	0	1	0	Std. Deviation from October
9VVU	81	0	2.9	-5.2	3	0	0	1	Bias

TABLE 6: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 5 BUT LISTED AS SUSPECT OVER THE PERIOD JANUARY TO JUNE 1998.

Column 1 Call sign or identifier.

Column 2 Number of wind speed observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.

Column 3 Number of wind observations with vector difference from background of more than 25ms^{-1} (gross error).

Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.

Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.

Column 6 Comments on quality of wind speed observations.

Notes: 1. Units are ms^{-1}.

Ident.	N Obs.	NGE	SD	Bias	Comments
DQVK	540	3	5.7	5.0	Bias reduced in December
ELND4	47	0	2.6	3.7	Bias reduced
ELQX8	4	0	5.8	7.1	Less than 40 reports
ELRR5	55	0	4.8	3.3	Bias reduced in October
FNTS	436	0	2.5	0.9	Bias reduced in July
LAZK4	35	0	5.1	3.5	Less than 40 reports, Bias reduced
PDGS	17	0	5.9	5.0	Less than 40 reports, Bias reduced
VRUU4	132	0	2.8	2.0	Bias reduced
VRVI3	0				No reports
XYKX	96	0	2.0	4.2	Bias reduced in September
3EMJ6	421	1	2.5	3.9	Bias reduced
3ETH4	68	0	2.5	3.3	Bias reduced
3FTR6	97	1	3.3	4.0	Bias reduced

TABLE 7: LIST OF MARINE OBSERVING PLATFORMS PRODUCING SUSPECT WIND DIRECTION OBSERVATIONS OVER THE PERIOD JULY TO DECEMBER 1998.

Column 1 Call sign or identifier.

Column 2 Number of wind direction observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.

Column 3 Number of wind observations with vector difference from background of more than 25ms^{-1} (gross error).

Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.

Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.

Columns 6-9 Number of times observing platform has appeared on suspect lists. B=Bracknell, E=ECMWF, T=Tokyo, W=Washington.

Column 10 Comments on quality of wind direction observations.

Notes:

1. Units are degrees (°).
2. Observing platforms marked § had a significant bias at some time within the period and the statistics and their plots refer to direction reports associated with background wind speeds greater than 5 ms^{-1}. If no significant speed bias was present the statistics and plots refer to direction reports with an observed speed greater than 5 ms^{-1}.
3. Observing platforms marked with an asterisk were listed in the previous report (January to June 1998)

Table 7a: Platforms reporting in BUOY code

*i): Platforms **non-operational** at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
12506	136	0	34.5	-88.9	1	1	0	1	Bias

*ii): Platforms **operational** at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
21531 *§	1095	0	24.4	-33.8	1	4	0	0	Bias
52624	808	0	64.3	19.7	2	4	3	1	Standard Deviation
55587	3996	0	21.7	28.1	3	5	1	1	Bias from December

Table 7b: Platforms reporting in SHIP code

Ident.	N Obs.	NGE	SD	Bias	B	E	T	W	Comments
ELTQ5	182	0	60.0	7.9	1	0	0	0	Erratic
GBSA	158	3	82.0	-16.1	0	1	0	2	Erratic
GVSN	134	1	65.8	6.4	0	1	0	1	Erratic
LAKW2	87	0	77.3	5.6	1	1	1	2	Erratic
UCMR	126	1	65.8	-21.6	2	1	2	0	Erratic
3FFF8	80	0	62.4	-2.3	2	1	1	1	Standard Deviation
46053	413	0	18.9	-34.9	3	1	0	3	Bias

TABLE 8: LIST OF PLATFORMS REPORTING IN SHIP CODE NOT APPEARING IN TABLE 7 BUT LISTED AS SUSPECT OVER THE PERIOD JANUARY TO JUNE 1998.

Column 1 Call sign or identifier.

Column 2 Number of wind direction observations available for monitoring over the 6-month period, excluding duplicates, but including any observations with gross errors.

Column 3 Number of wind observations with vector difference from background of more than $25ms^{-1}$ (gross error).

Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.

Column 5 Mean of observation-minus-background differences (bias) excluding cases of gross error.

Column 6 Comments on quality of wind direction observations.

Notes: 1. Units are degrees (°).

Ident.	N Obs.	NGE	SD	Bias	Comments
C6OT6	3	0	9.3	-9.3	Less then 40 reports
3FRU7	4	0	31.3	13.0	Less than 40 reports
45135	1387	9	38.8	7.7	Bias reduced in October
62120	2729	0	21.7	28.1	Bias stable and reduced in December
62162	410	2	30.5	6.5	Bias stable and reduced in December
63104	573	0	68.4	21.7	Bias stable and reduced in December
63112	474	0	58.8	13.1	Bias stable and reduced in December

TABLE 9: LIST OF MARINE OBSERVING PLATFORMS REPORTING SUSPECT SEA-SURFACE TEMPERATURE OBSERVATIONS OVER THE PERIOD JULY TO DECEMBER 1998.

Column 1 Call sign or identifier

Column 2 Number of sea-surface temperature observations available for monitoring during December 1998 (or November and December if suspect only by considering the two month period), including any observations with gross errors.

Column 3 Number of sea surface temperature observations differing by more than 15°C from the NCEP background field (gross errors).

Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.

Column 5 Mean of observation-minus-background differences excluding cases of gross error.

Column 6 Comments on quality of sea surface temperature observations.

Notes:

1. Units are °C.
2. Observing platforms marked with an asterisk were listed in the previous report (January to June 1998)

Table 9a: Platforms reporting in BUOY code

*i): Platforms **non-operational** at the end of the reporting period*

The information available from NCEP did not allow statistics to be assessed for platforms in this category.

*ii): Platforms **operational** at the end of the reporting period*

Ident.	N Obs.	NGE	SD	Bias	Comments
11537	89	0	0.5	4.4	Bias
15538 *	81	0	0.3	4.8	Bias
17903	69	0	0.2	-12.2	Bias
21618	178	0	2.1	4.2	Bias
21623	142	0	2.4	5.4	Bias
32821	57	38	4.6	-0.9	Gross Errors
44613	225	218	4.1	-1.6	Gross Errors
46547	145	0	1.7	4.5	Bias
46568	172	0	2.2	4.9	Bias
61521	110	0	2.7	4.9	Bias
61539	84	11	2.3	-11.3	Bias
61540	309	0	1.7	4.2	Bias
61541	337	0	2.9	7.3	Bias
61542	164	0	2.2	7.4	Bias
61544	327	0	1.1	4.6	Bias

Continued →

Ident.	N Obs.	NGE	SD	Bias	Comments
61545	311	4	2.1	7.6	Bias
61546	334	4	2.8	8.2	Bias
61547	331	0	2.9	6.9	Bias
61548	327	0	2.7	6.3	Bias
61549	326	0	2.0	6.9	Bias
61564	298	0	2.9	4.1	Bias
61565	185	0	3.7	7.9	Bias
61598	120	5	3.1	6.5	Bias
61612	147	6	3.8	-7.6	Bias
61629	321	0	2.3	4.3	Bias
62519	202	199	5.8	-6.3	Gross Errors

Table 9b: Platforms reporting in SHIP code

Ident.	N Obs.	NGE	SD	Bias	Comments
ABAN6	729	61	4.8	6.8	Bias
CGBY	43	4	3.6	4.7	Bias
CGDS	77	2	4.6	6.4	Bias
CTHI	41	21	4.1	-11.8	Gross Errors
CYBJ	47	1	3.7	4.7	Bias
CYLX	47	2	4.4	5.2	Bias (Over two months)
C6OQ8	49	0	2.0	4.5	Bias
DBBX	88	0	3.7	5.5	Bias
ELOW4	45	0	4.0	5.7	Bias
KLKZ	51	2	1.6	5.5	Bias
LF3N	176	0	3.7	-6.8	Bias (Over two months)
LPOI1	638	60	2.9	7.2	Bias
MSTM6	44	1	2.2	4.5	Bias
PFUA	46	2	2.8	-6.1	Bias
SUPN6	728	78	5.1	7.1	Bias
TPLM2	730	17	6.2	3.5	Standard Deviation
UIAG	54	0	2.0	4.5	Bias
VCTM	50	0	3.3	4.8	Bias (Over two months)
VGNW	79	2	3.4	6.2	Bias (Over two months)
WBS4	92	10	4.2	7.0	Bias
WE4805	94	0	3.3	4.6	Bias
WQZ9870 *	114	1	3.3	4.6	Bias
YJZC5	64	0	1.5	-4.8	Bias (Over two months)
3FDZ5	62	0	2.4	6.5	Bias (Over two months)
3FFR6	51	5	2.3	-4.2	Bias
44011	724	0	0.8	-5.1	Bias
44014 *	716	0	1.6	-5.0	Bias
45135	721	80	5.3	7.4	Bias
46060	1440	0	1.6	5.1	Bias
46131	927	90	2.6	8.1	Bias
46146	725	96	2.5	7.3	Bias
46181	730	48	3.3	5.6	Bias

TABLE 10: PLATFORMS LISTED AS SUSPECT, BY NCEP, IN DECEMBER 1998 FOR WHICH THERE IS INSUFFICIENT INFORMATION TO JUDGE OBSERVATION QUALITY OVER A LONGER PERIOD.

Column 1 Call sign or identifier

Column 2 Number of sea-surface temperature observations available for monitoring during December 1998, including any observations with gross errors.

Column 3 Number of sea surface temperature observations differing by more than 15°C from the NCEP background field (gross errors).

Column 4 Standard deviation of observation-minus-background differences excluding cases of gross error.

Column 5 Mean of observation-minus-background differences excluding cases of gross error.

Column 6 Comments on quality of sea surface temperature observations.

Notes: 1. Units are °C.

Table 10a: Platforms reporting in BUOY code

Ident.	N Obs.	NGE	SD	Bias	Comments
64903	22	20	0.4	14.3	Gross Errors
64906	30	28	0.0	14.2	Gross Errors
64909	25	20	0.7	14.3	Gross Errors

Table 10b: Platforms reporting in SHIP code

Ident.	N Obs.	NGE	SD	Bias	Comments
UCDP	21	1	6.6	-7.0	Bias and Standard Deviation
UDTH	28	2	3.0	4.5	Bias
VCLX	41	0	1.9	4.2	Bias
VCJR	21	0	2.1	4.1	Bias
VOPM	29	1	2.5	4.9	Bias
VRVB9	34	0	2.3	7.0	Bias
WRB4141	30	0	3.9	5.8	Bias
WUR8857	20	1	2.6	5.4	Bias

Figure 1: Number of observations of pressure received at Bracknell on the GTS for each of the six-month periods covered by the WMO reports on the quality of marine observations

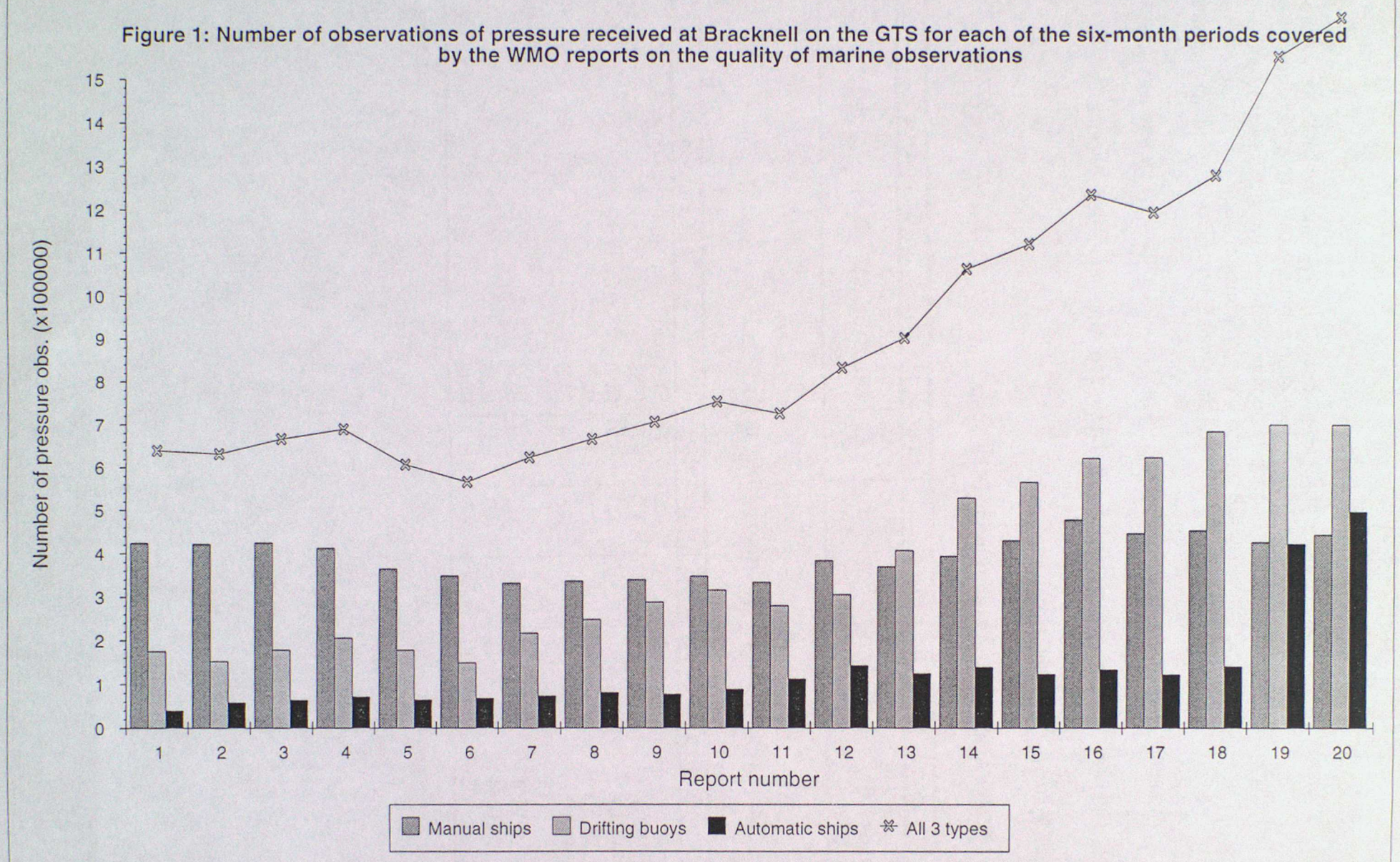
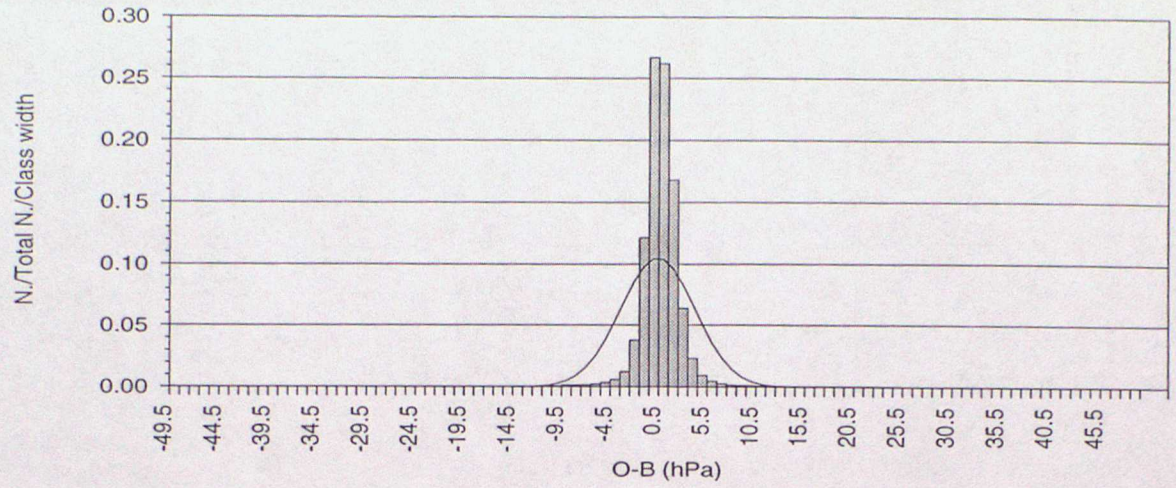
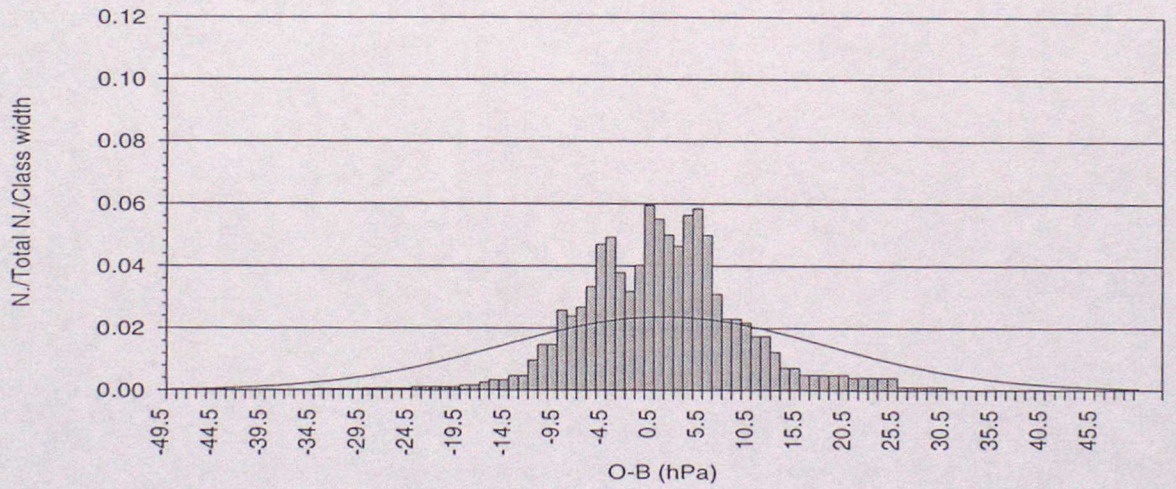


Figure 2a: Distribution of ship O-B pressure (hPa)
Period of data: Jul-Dec 1998 Data used: All observations



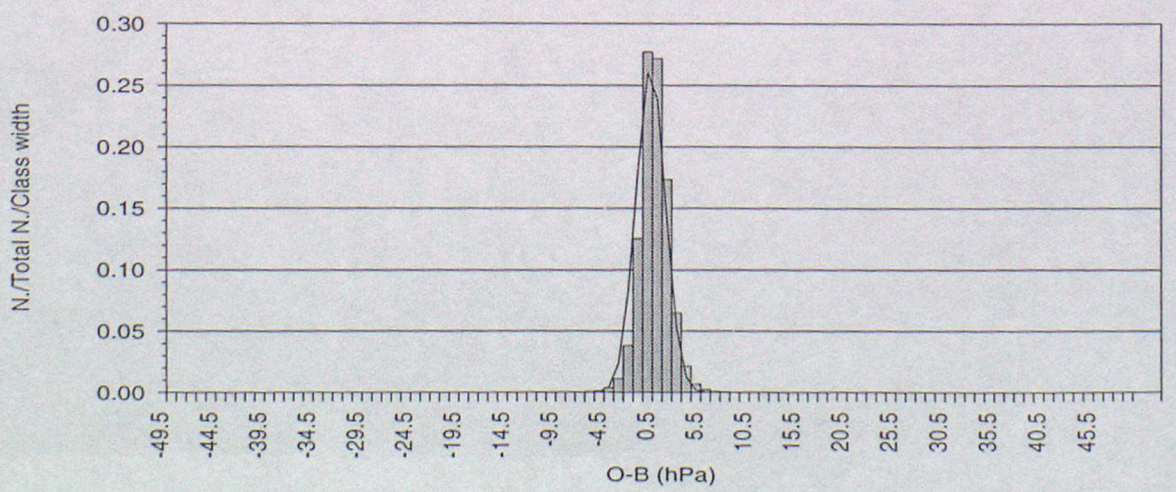
Mean O-B = -0.1 SD O-B = 3.8

Figure 2b: Distribution of ship O-B pressure (hPa)
Period of data: Jul-Dec 1998 Data used: Flagged observations



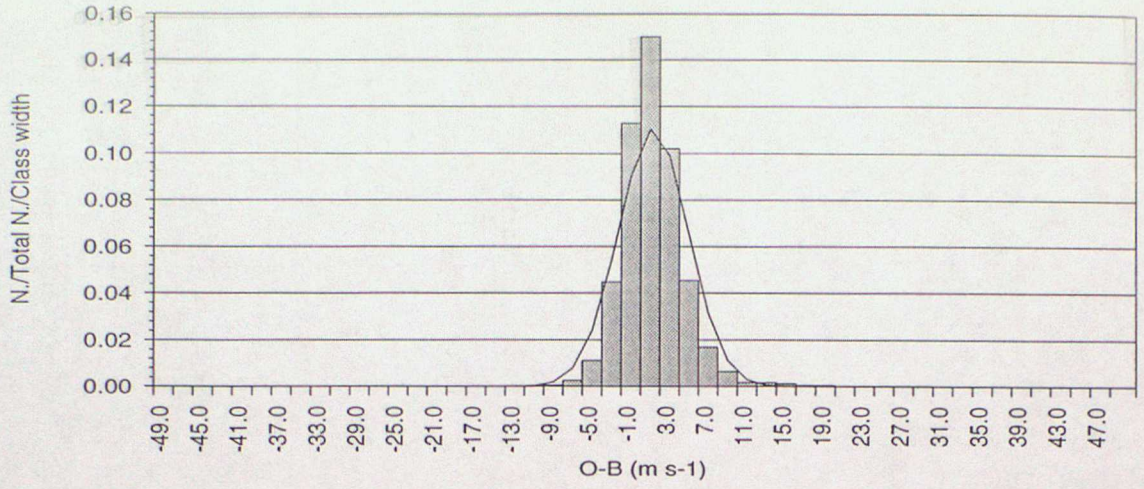
Mean O-B = 1.1 SD O-B = 16.9

Figure 2c: Distribution of ship O-B pressure (hPa)
Period of data: Jul-Dec 1998 Data used: Unflagged observations



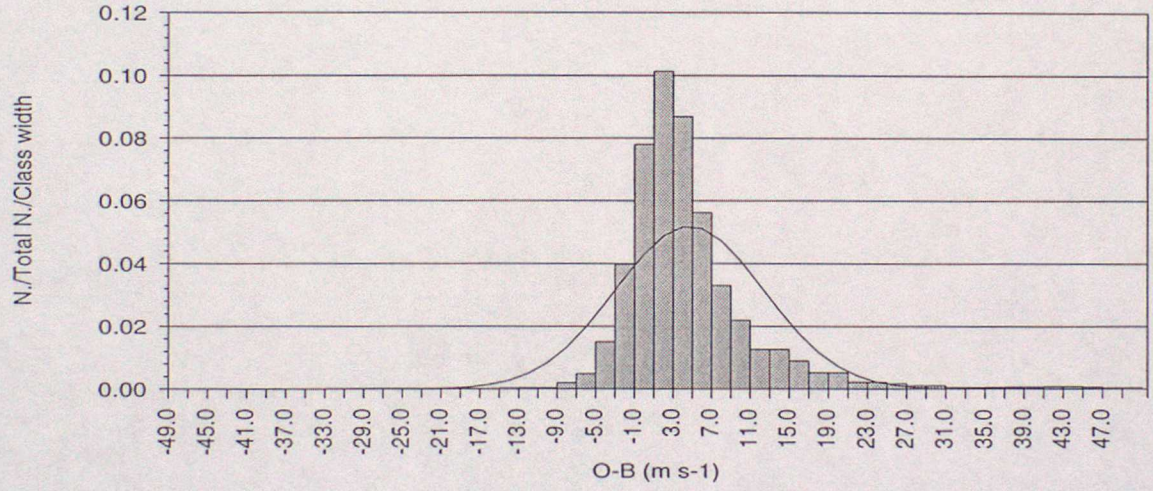
Mean O-B = -0.2 SD O-B = 1.5

Figure 2d: Distribution of ship O-B wind speed (m s-1)
Period of data: Jul-Dec 1998 Data used: All observations



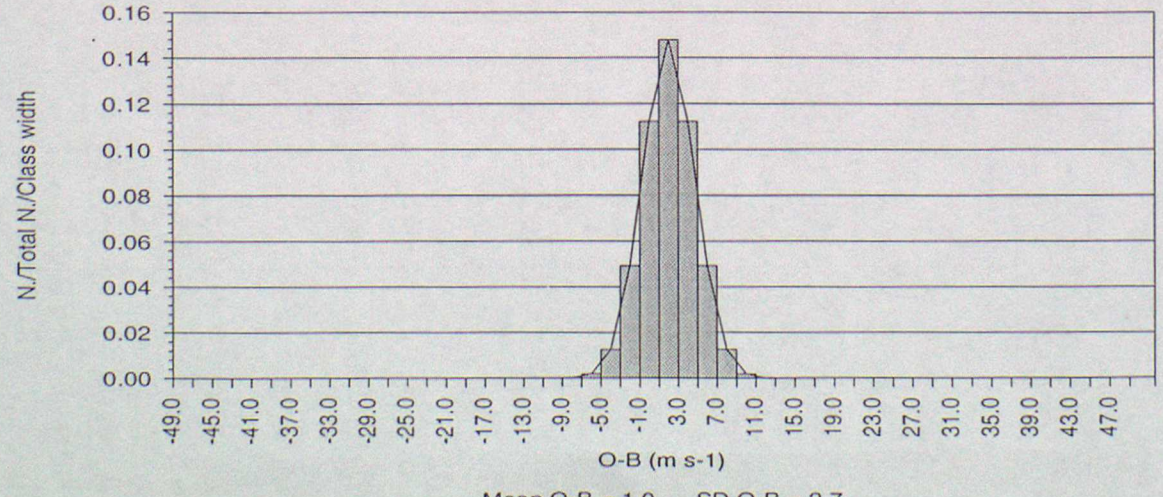
Mean O-B =1.3 SD O-B = 3.6

Figure 2e: Distribution of ship O-B wind speed (m s-1)
Period of data: Jul-Dec 1998 Data used: Flagged observations



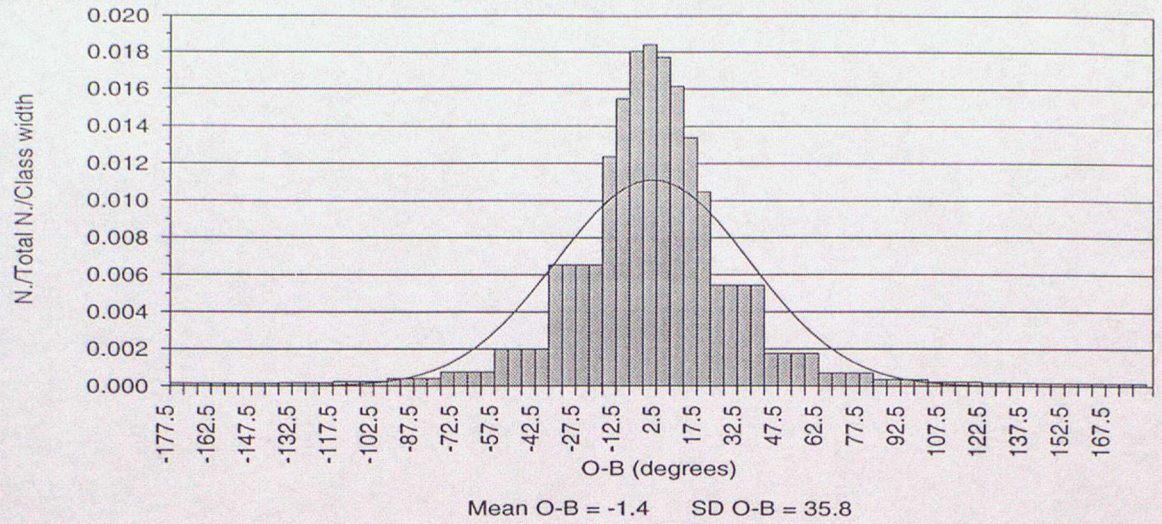
Mean O-B = 3.7 SD O-B = 7.7

Figure 2f: Distribution of ship O-B wind speed (m s-1)
Period of data: Jul-Dec 1998 Data used: Unflagged observations



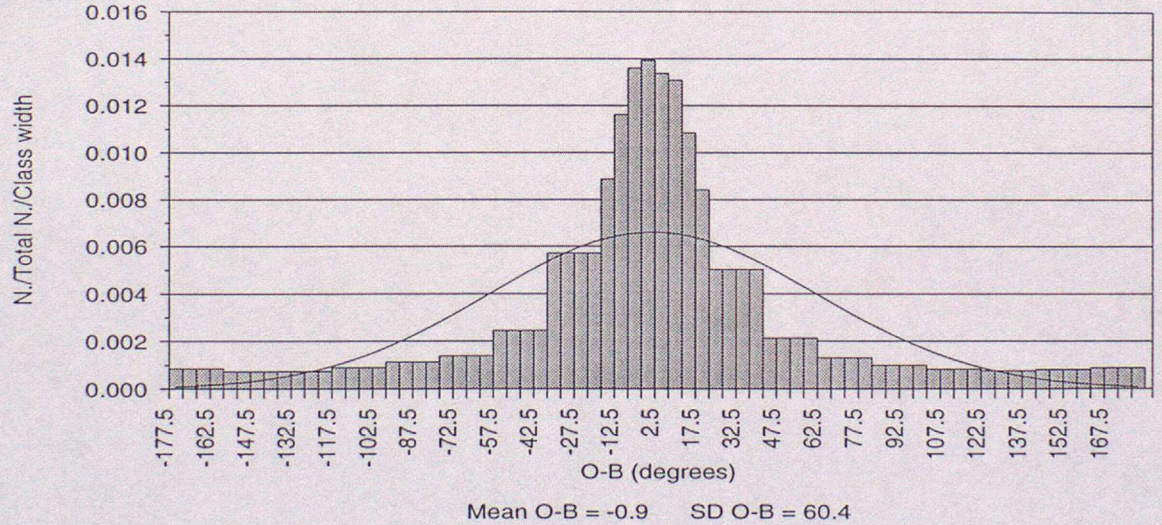
Mean O-B = 1.0 SD O-B = 2.7

Figure 2g: Distribution of ship O-B wind direction (degrees)
Period of data: Jul-Dec 1998 Data used: All observations



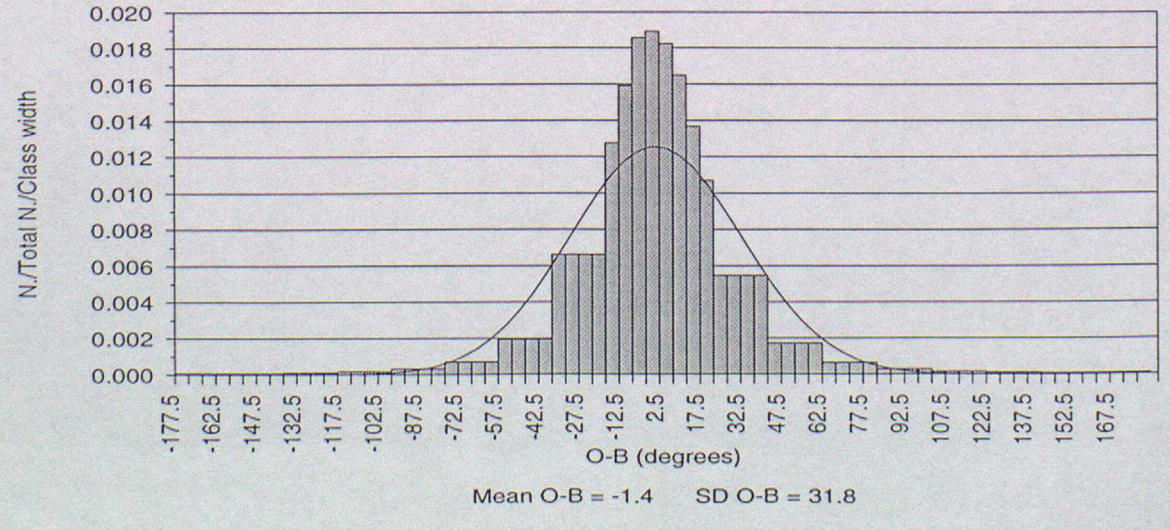
Mean O-B = -1.4 SD O-B = 35.8

Figure 2h: Distribution of ship O-B wind direction (degrees)
Period of data: Jul-Dec 1998 Data used: Flagged observations



Mean O-B = -0.9 SD O-B = 60.4

Figure 2j: Distribution of ship O-B wind direction (degrees)
Period of data: Jul-Dec 1998 Data used: Unflagged observations



Mean O-B = -1.4 SD O-B = 31.8

FIG 3: BIAS OF SHIP PRESSURE O–B. DATE:– JULY – DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS
CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10
AREAS SHADED HAVE BIAS OF MAGNITUDE GREATER THAN 0.5 HPA

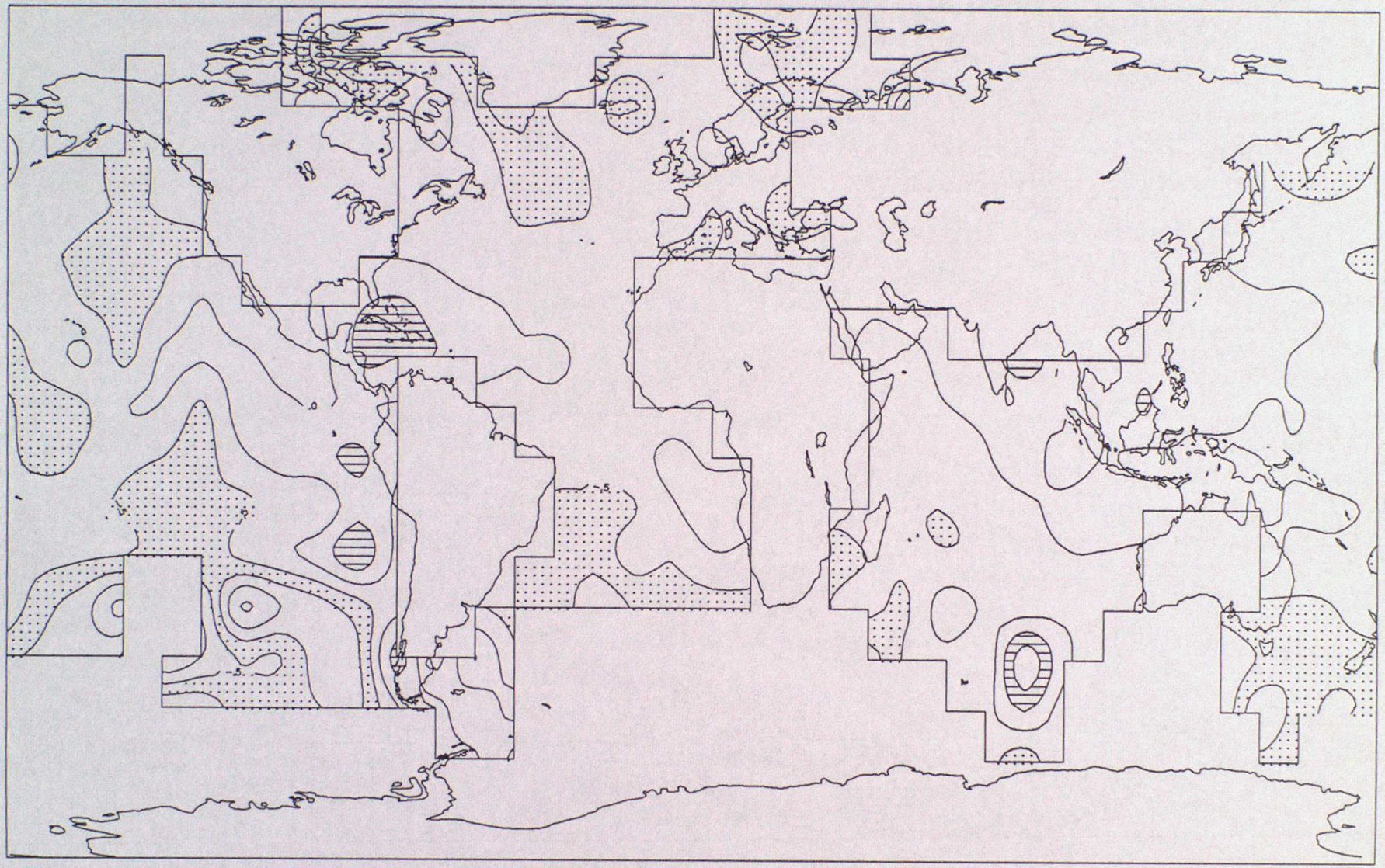


FIG 4: S.D. OF SHIP PRESSURE O–B. DATE:– JULY – DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS
CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10
AREAS SHADED HAVE STANDARD DEVIATION GREATER THAN 2.0HPA

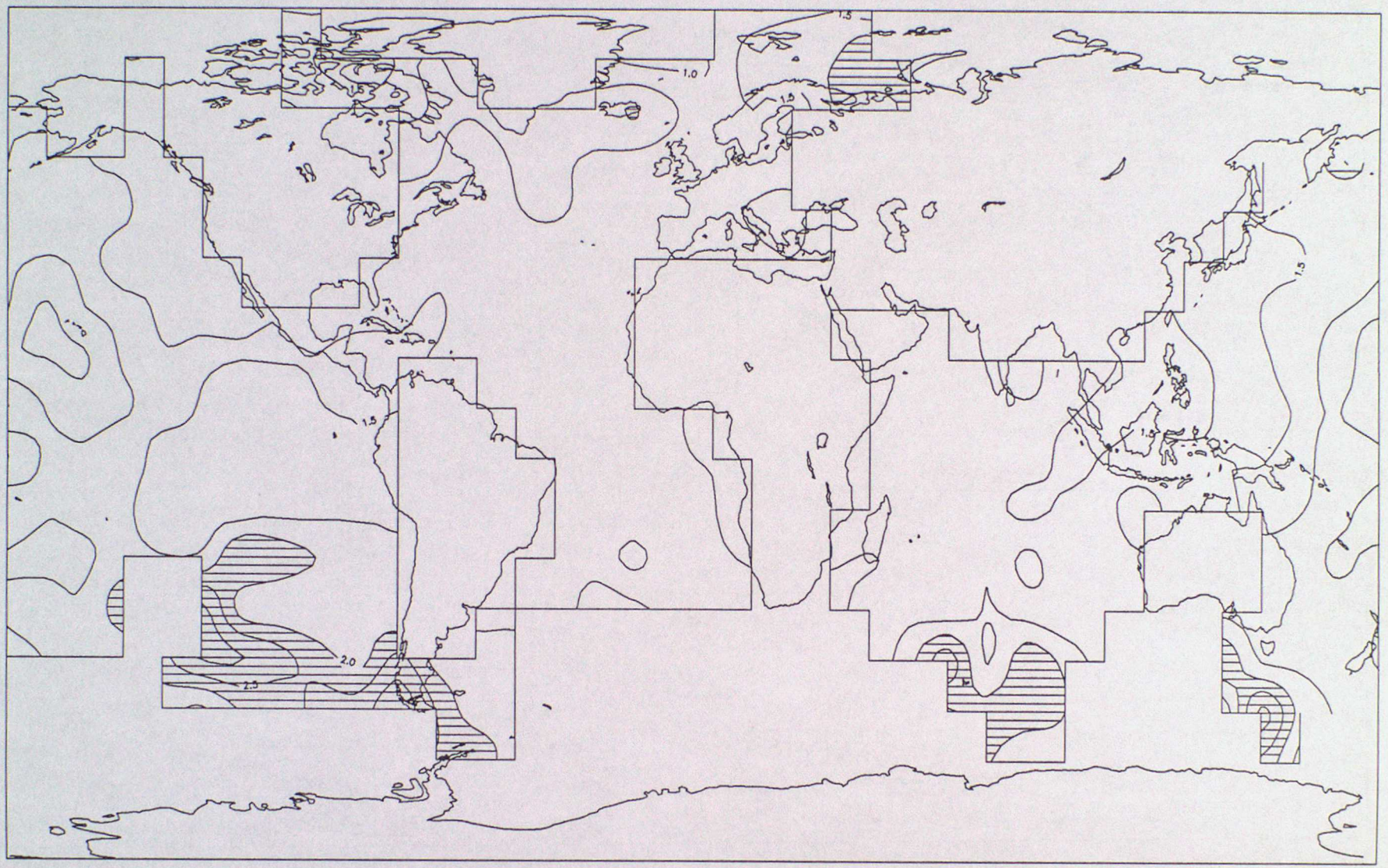


FIG 5:
PLOT OF NUMBER OF SHIP PRESSURE OBS. DATE:– JULY – DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL INCLUDED

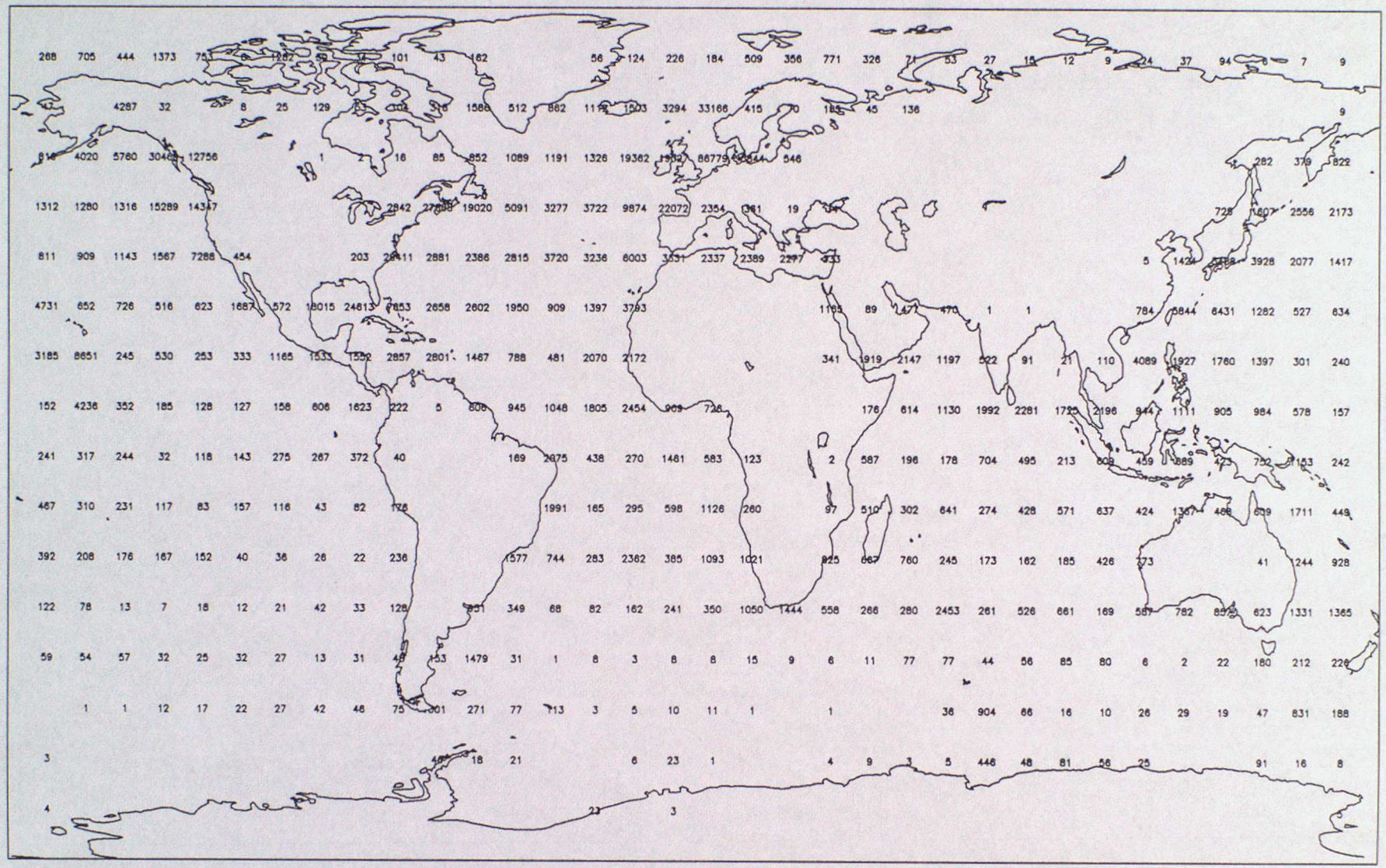


FIG 6: BIAS OF SHIP O-B WIND SPEED IN MS-1. DATE:- JULY - DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS
CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10
AREAS SHADED HAVE BIAS OF MAGNITUDE GREATER THAN 2.0MS-1

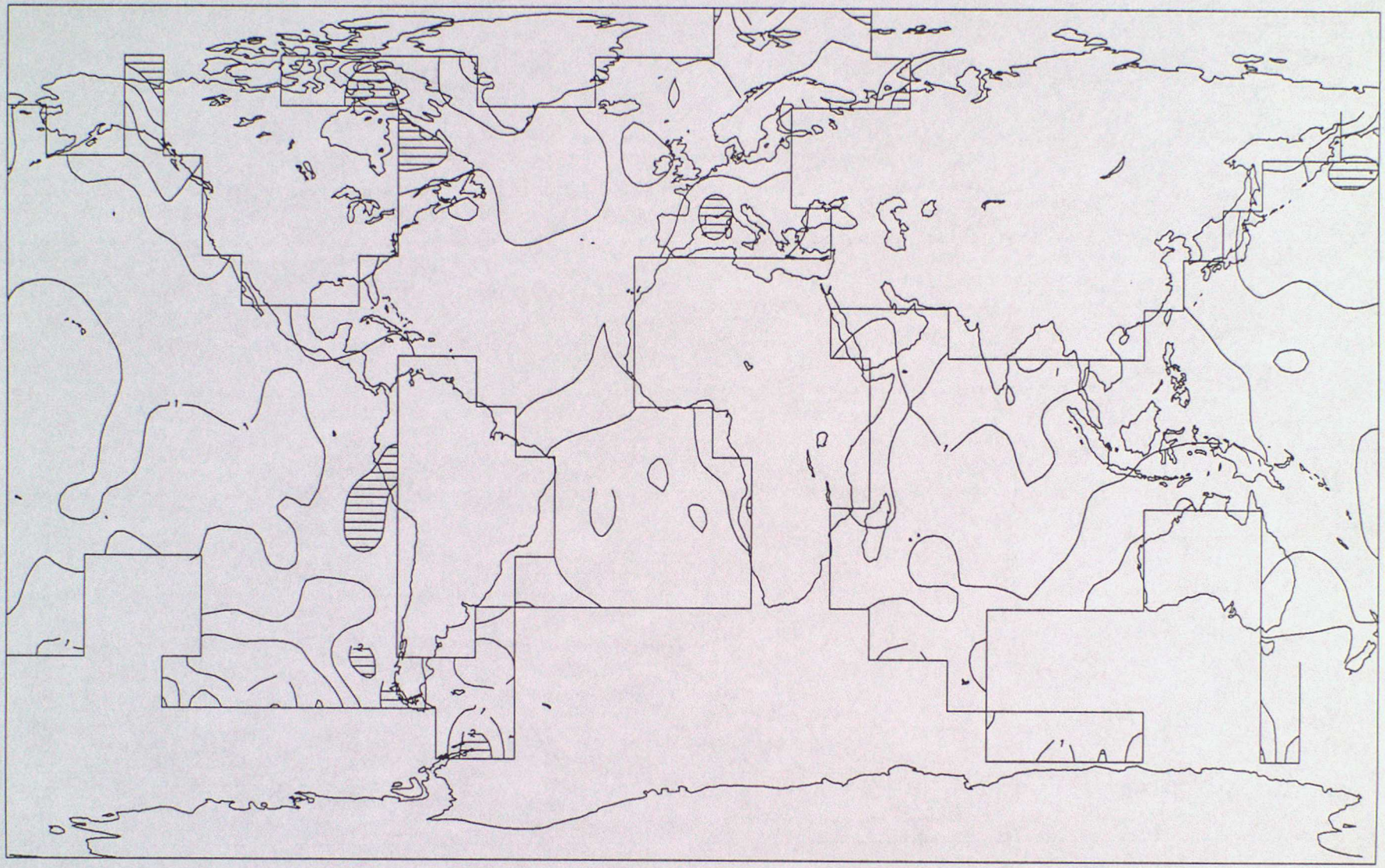


FIG 7: S.D. OF SHIP O−B WIND SPEED IN MS−1. DATE:− JULY − DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS
CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10
AREAS SHADED HAVE STANDARD DEVIATION GREATER THAN 4.0 MS−1

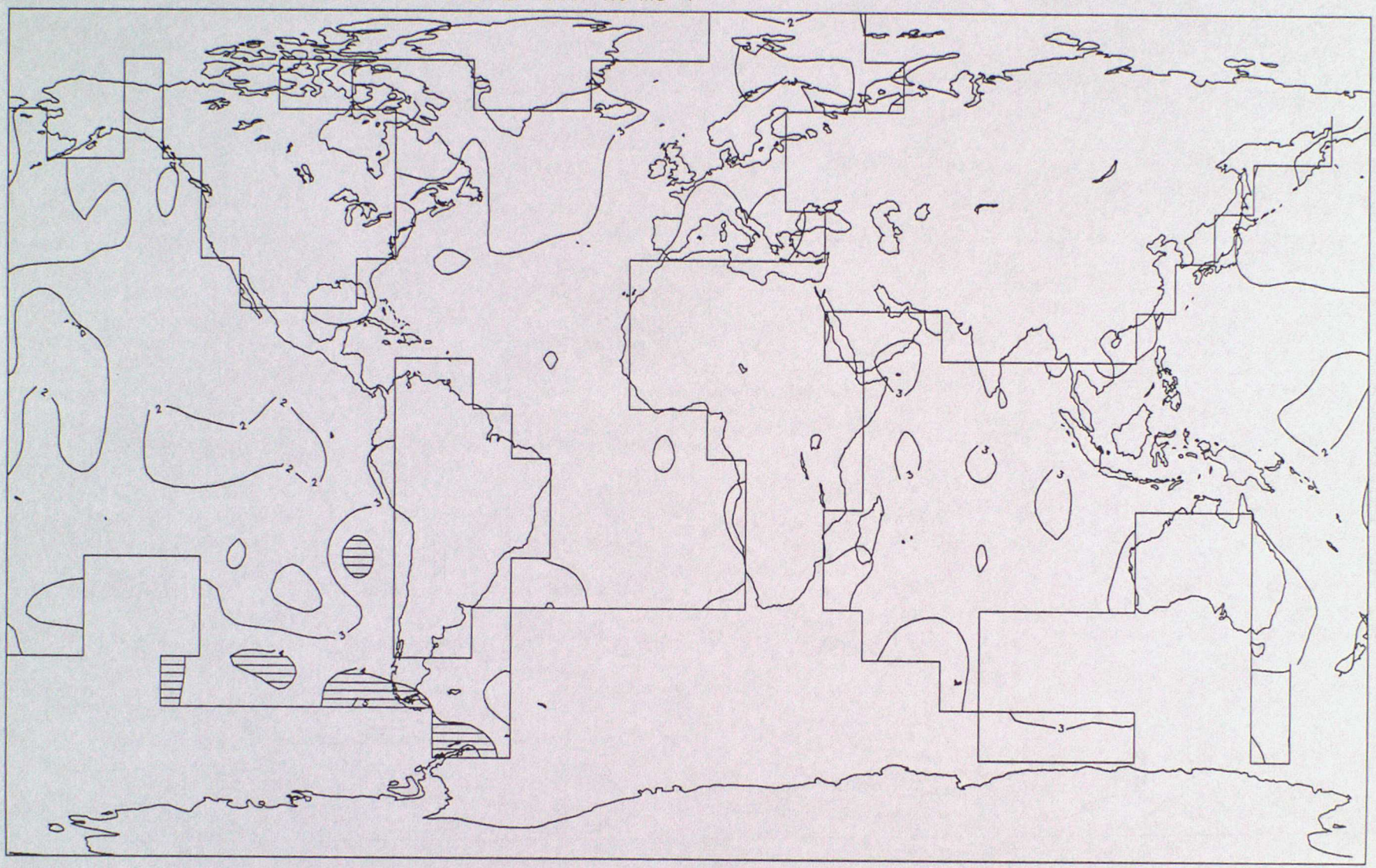


FIG 8:
PLOT OF NUMBER OF SHIP WIND SPEED OBS. DATE:– JULY – DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL INCLUDED

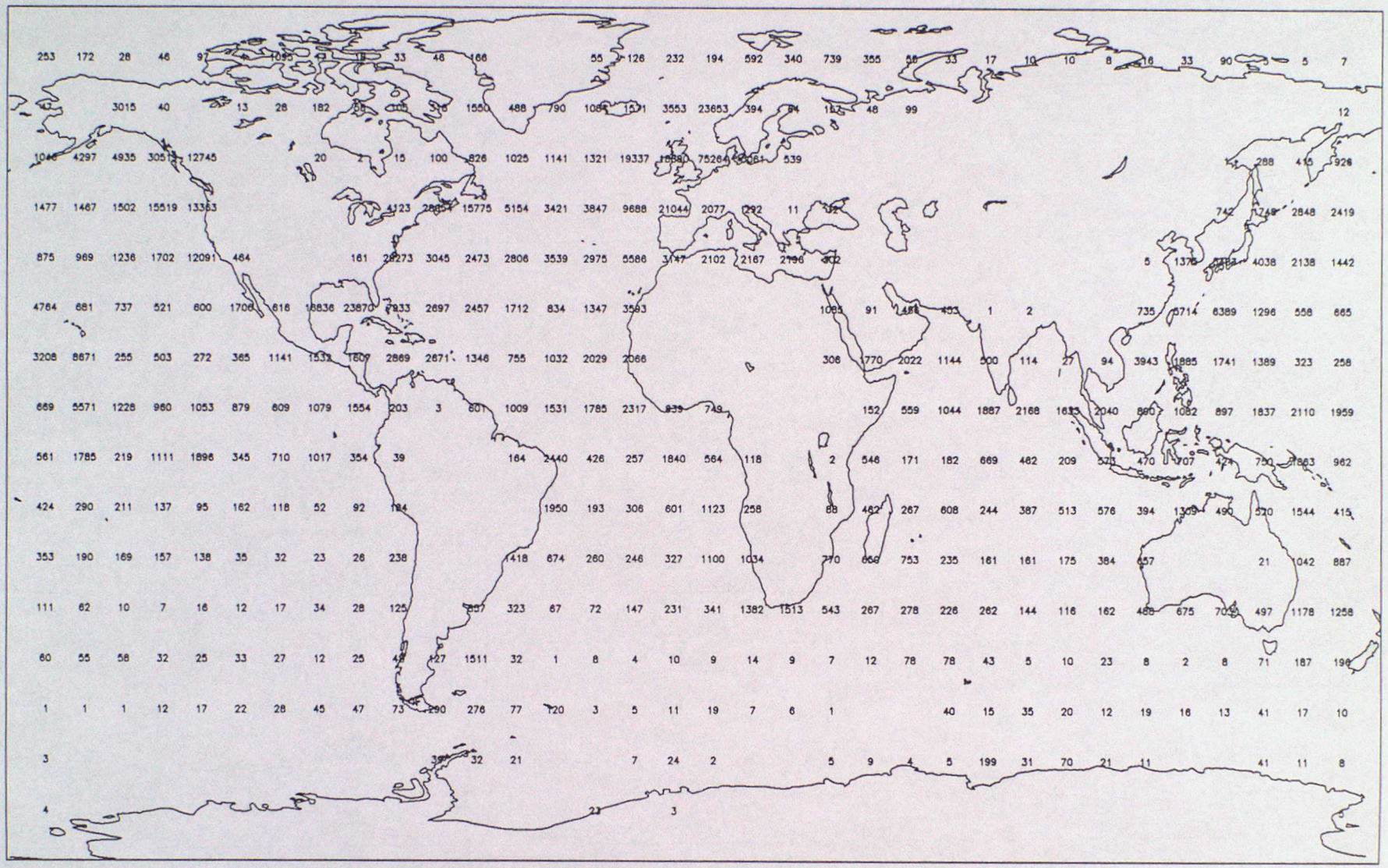


FIG 9: BIAS OF SHIP O–B WIND DIRECTION IN DEG. DATE:– JULY – DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS
CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10
AREAS SHADED HAVE BIAS OF MAGNITUDE GREATER THAN 10 DEG

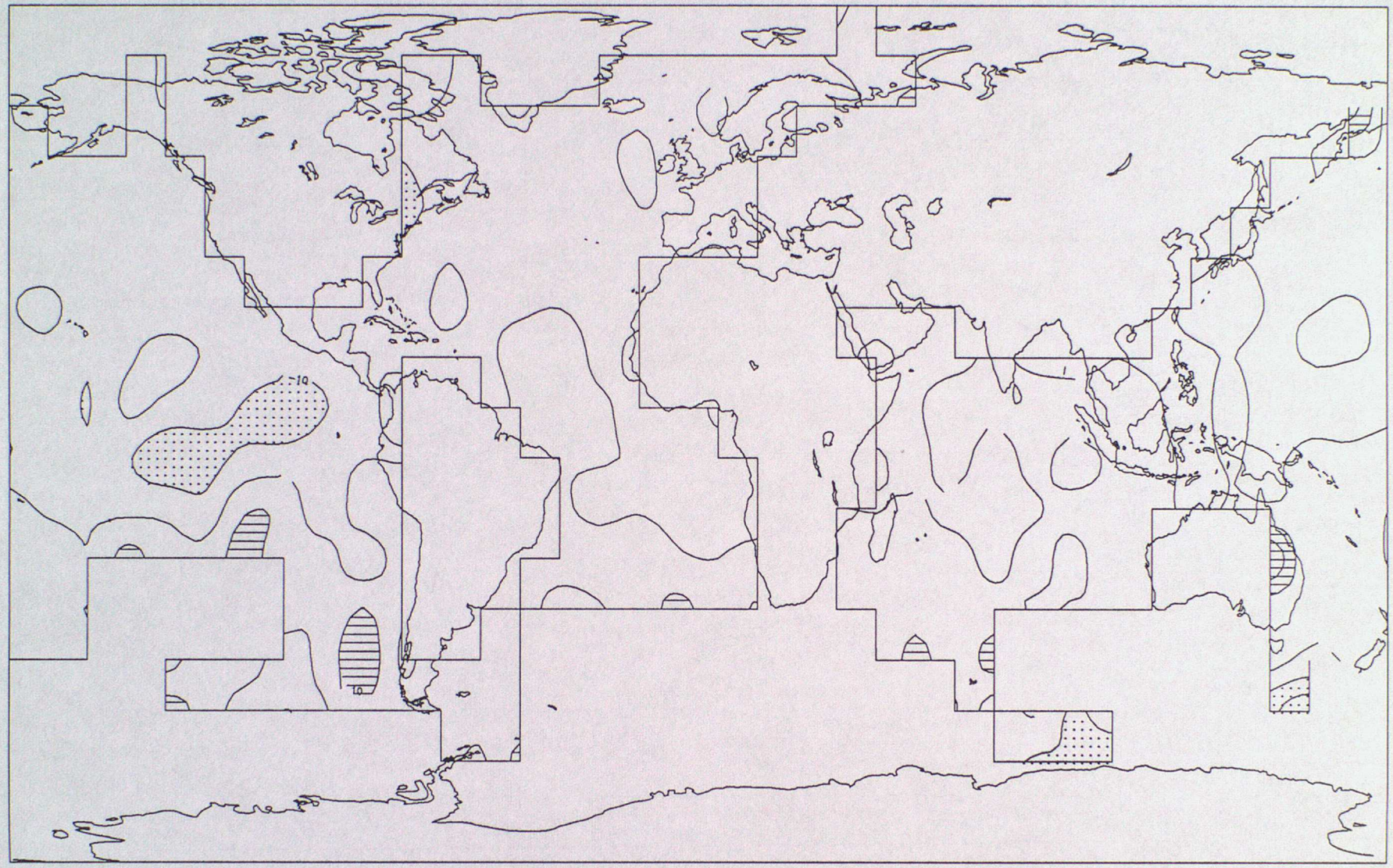


FIG 10: S.D. OF SHIP O−B WIND DIRECTION IN DEG. DATE:− JULY − DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL USED IN STATISTICS
CONTOURS DRAWN TO 10 DEGREE BOXES IF N. OF OBS > 10
AREAS SHADED HAVE STANDARD DEVIATION GREATER THAN 40 DEG

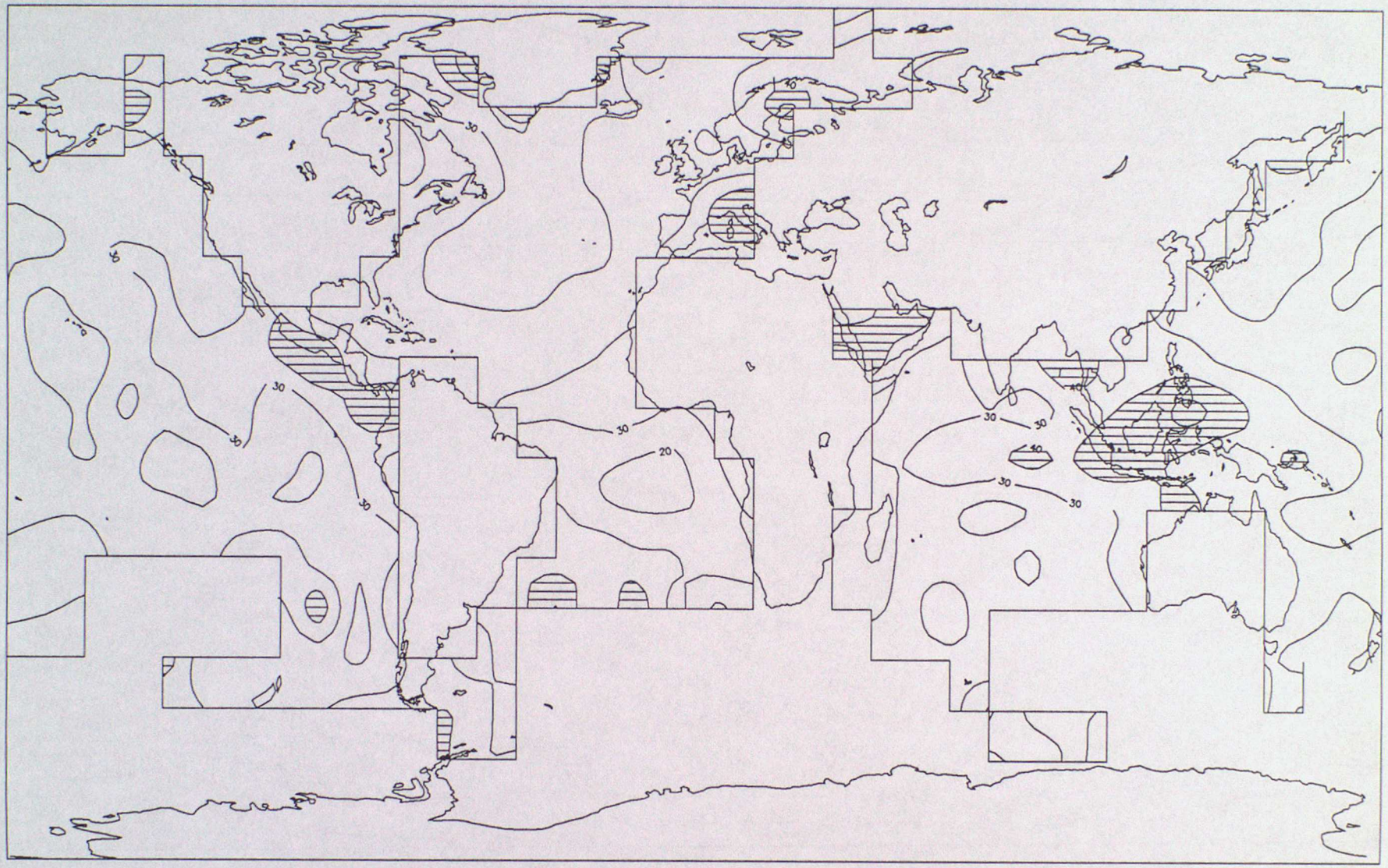
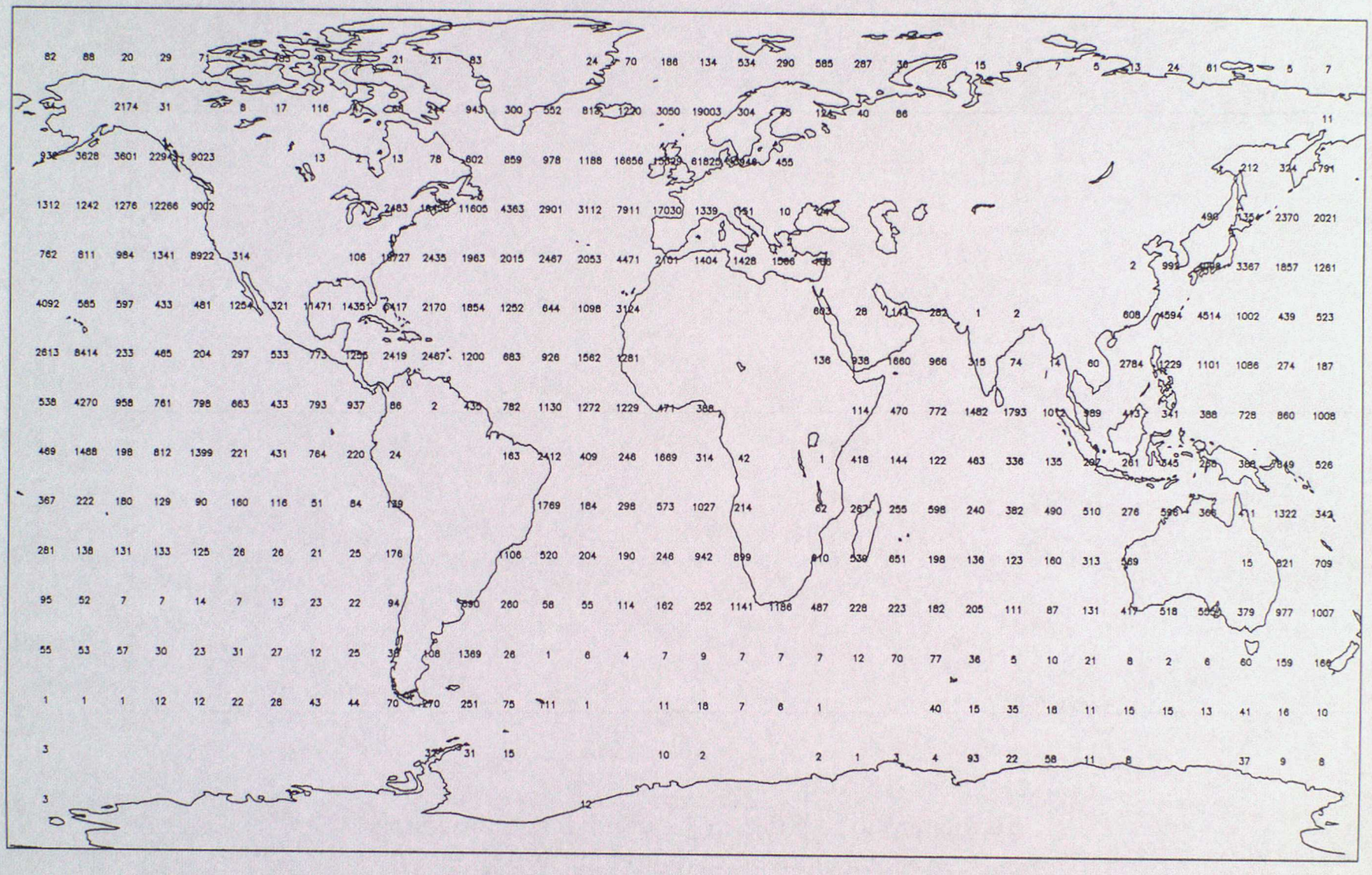
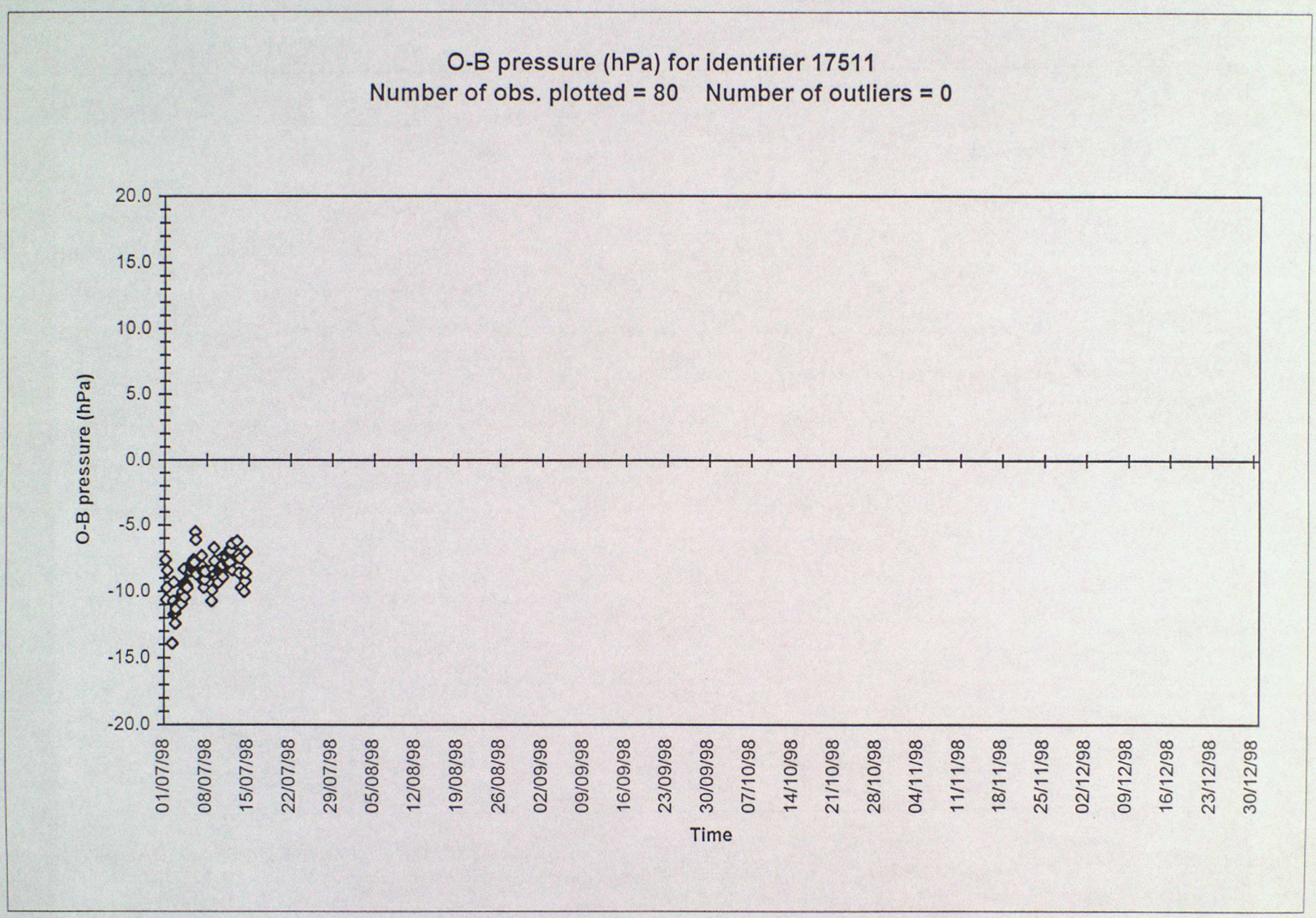
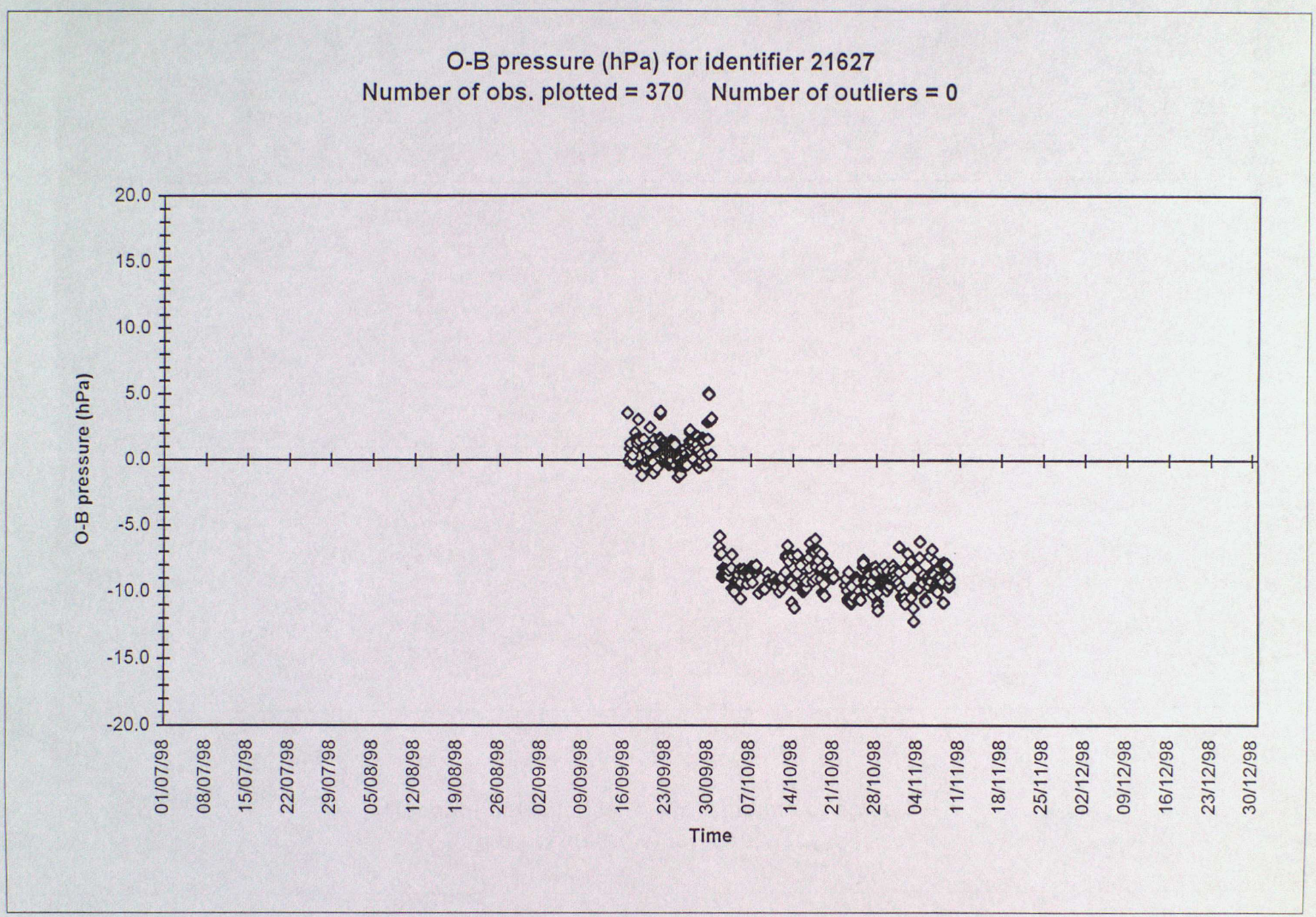


FIG 11:
PLOT OF NUMBER OF SHIP WIND DIRECTION OBS. DATE:– JULY – DECEMBER 1998
ONLY OBSERVATIONS PASSING QUALITY CONTROL INCLUDED




O-B pressure (hPa) for identifier 17511
Number of obs. plotted = 80 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier 21627
Number of obs. plotted = 370 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier 23928
Number of obs. plotted = 138 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier 29746
Number of obs. plotted = 2956 Number of outliers = 11
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
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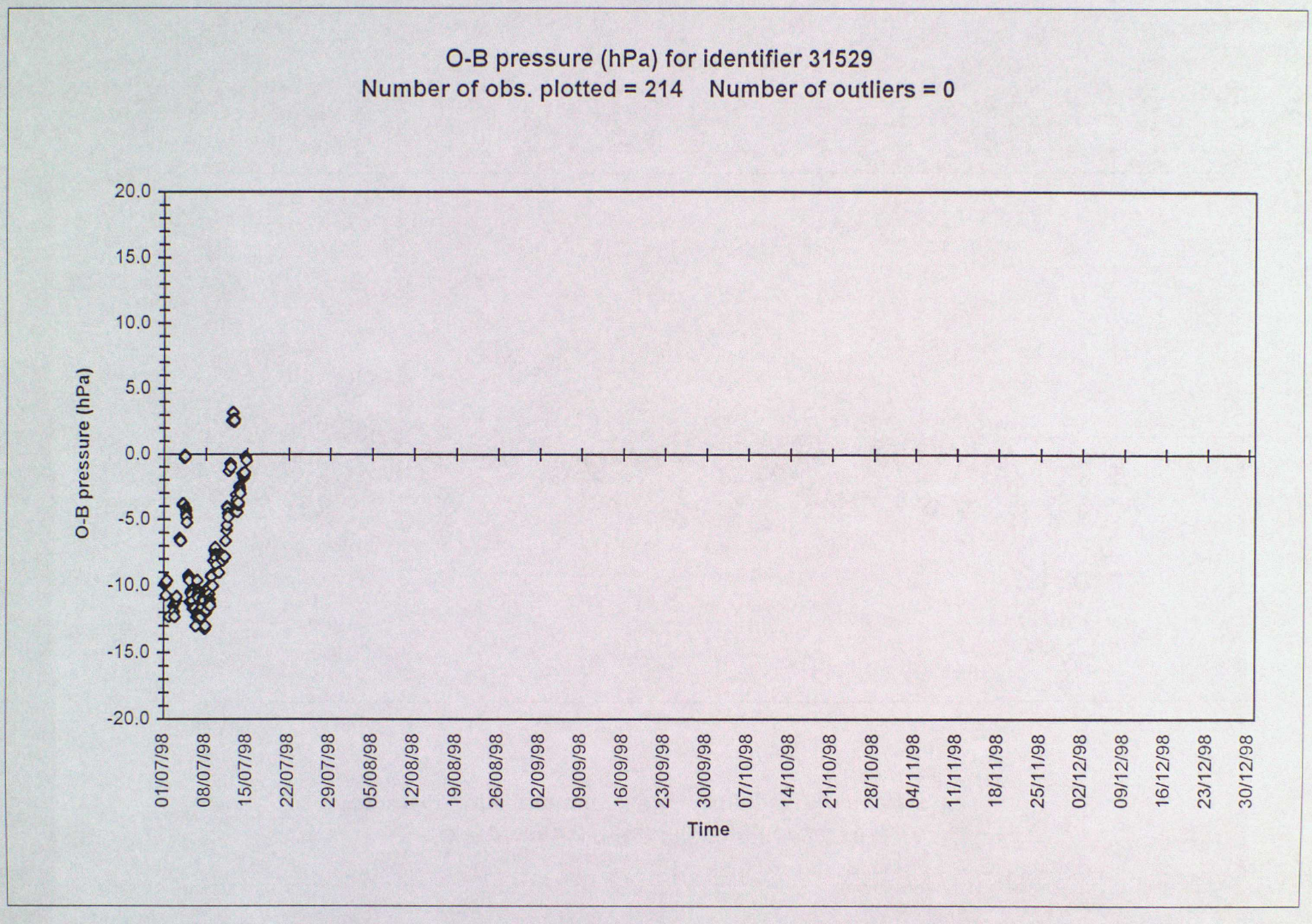
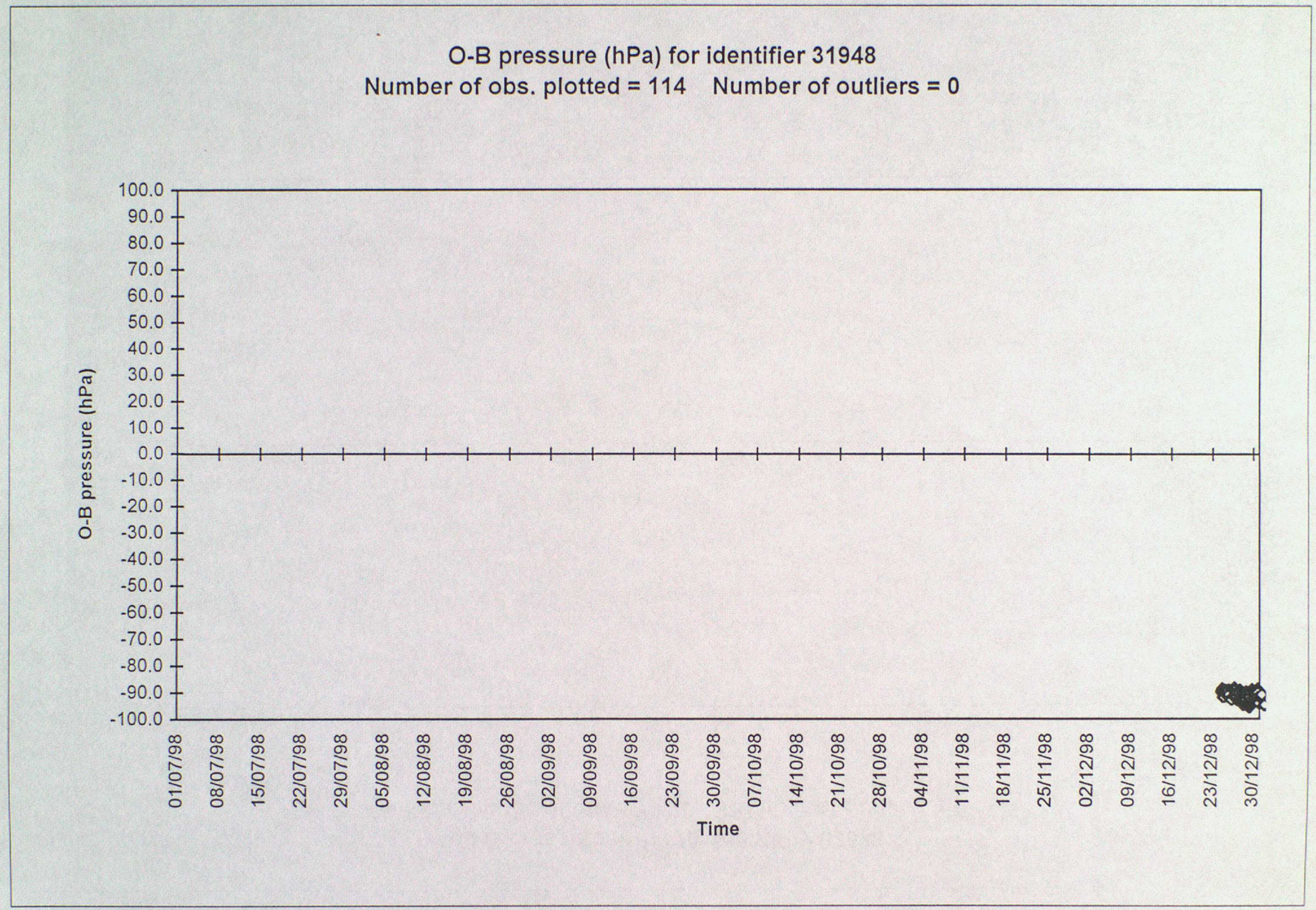
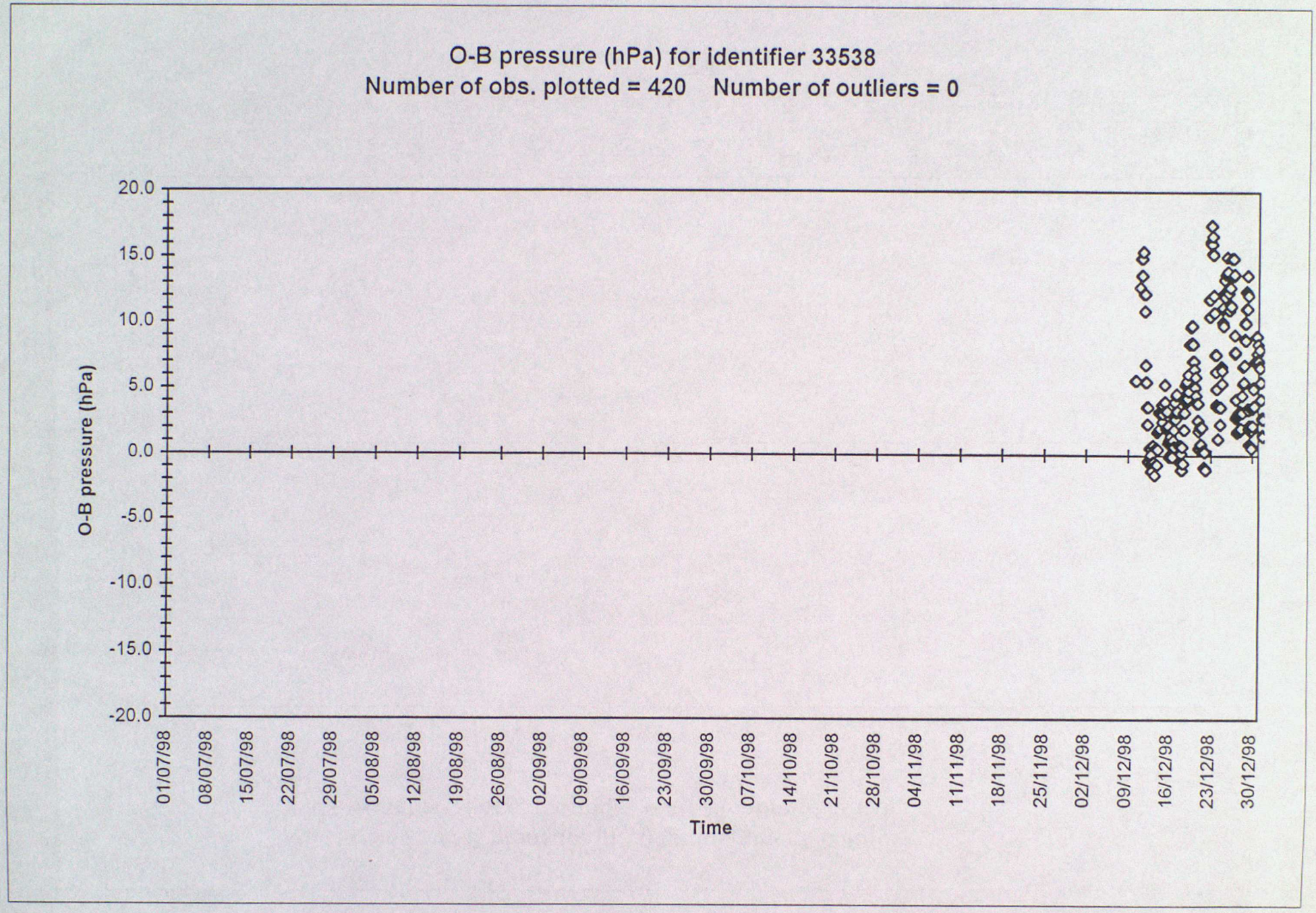
23/12/98
30/12/98


O-B pressure (hPa) for identifier 31529
Number of obs. plotted = 214 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier 31948
Number of obs. plotted = 114 Number of outliers = 0
O-B pressure (hPa)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier 33538
Number of obs. plotted = 420 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier 33947
Number of obs. plotted = 697 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
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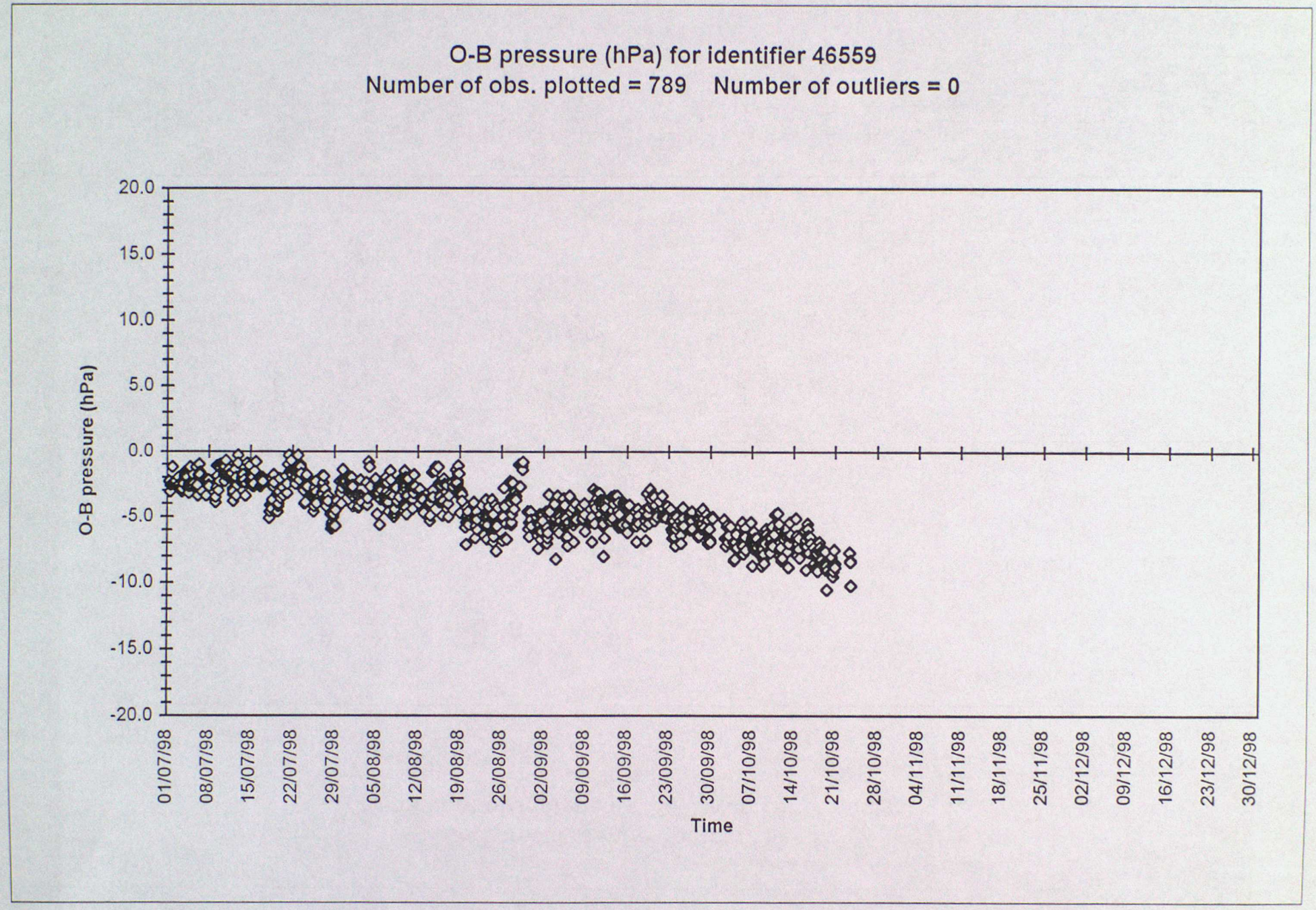
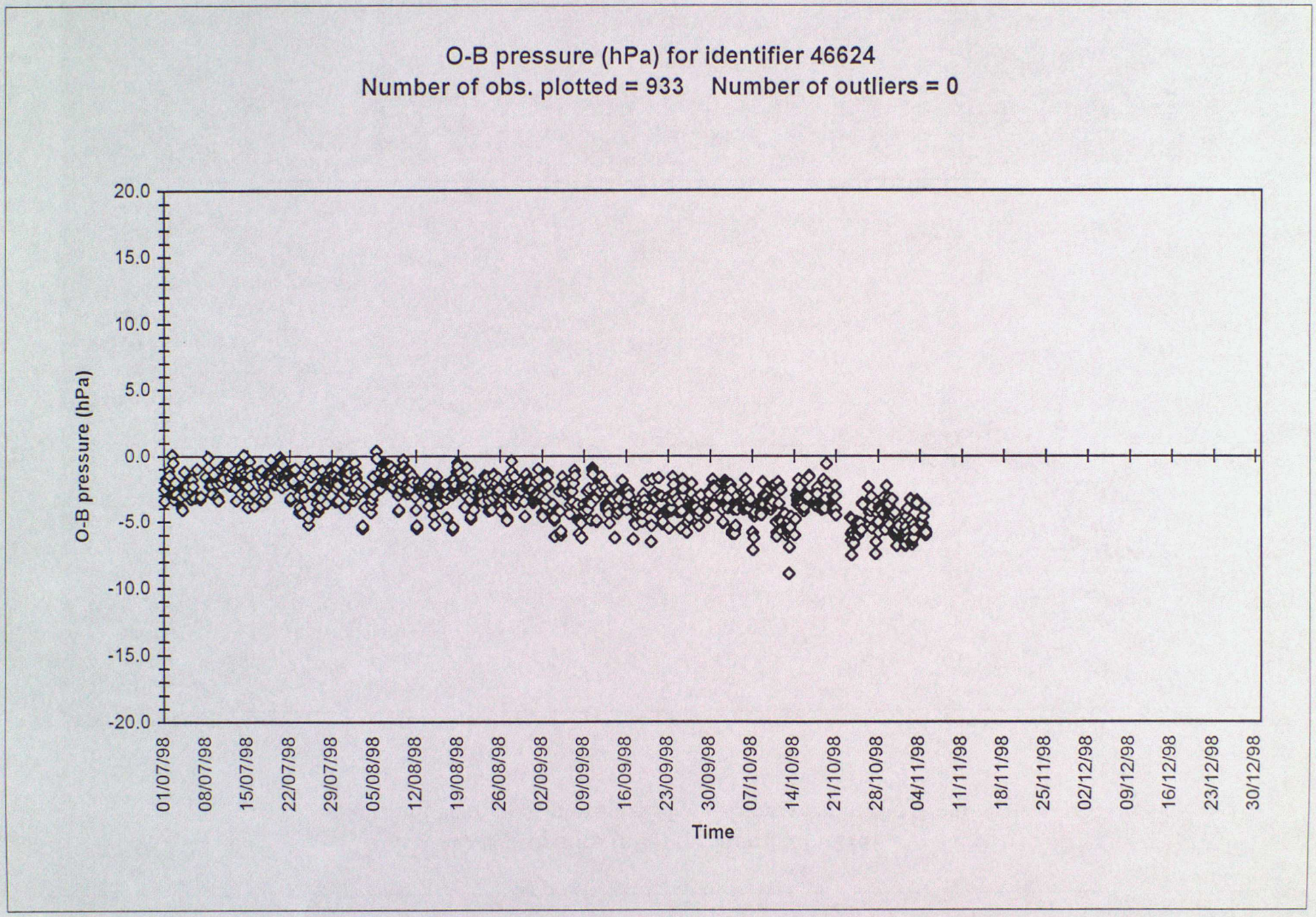
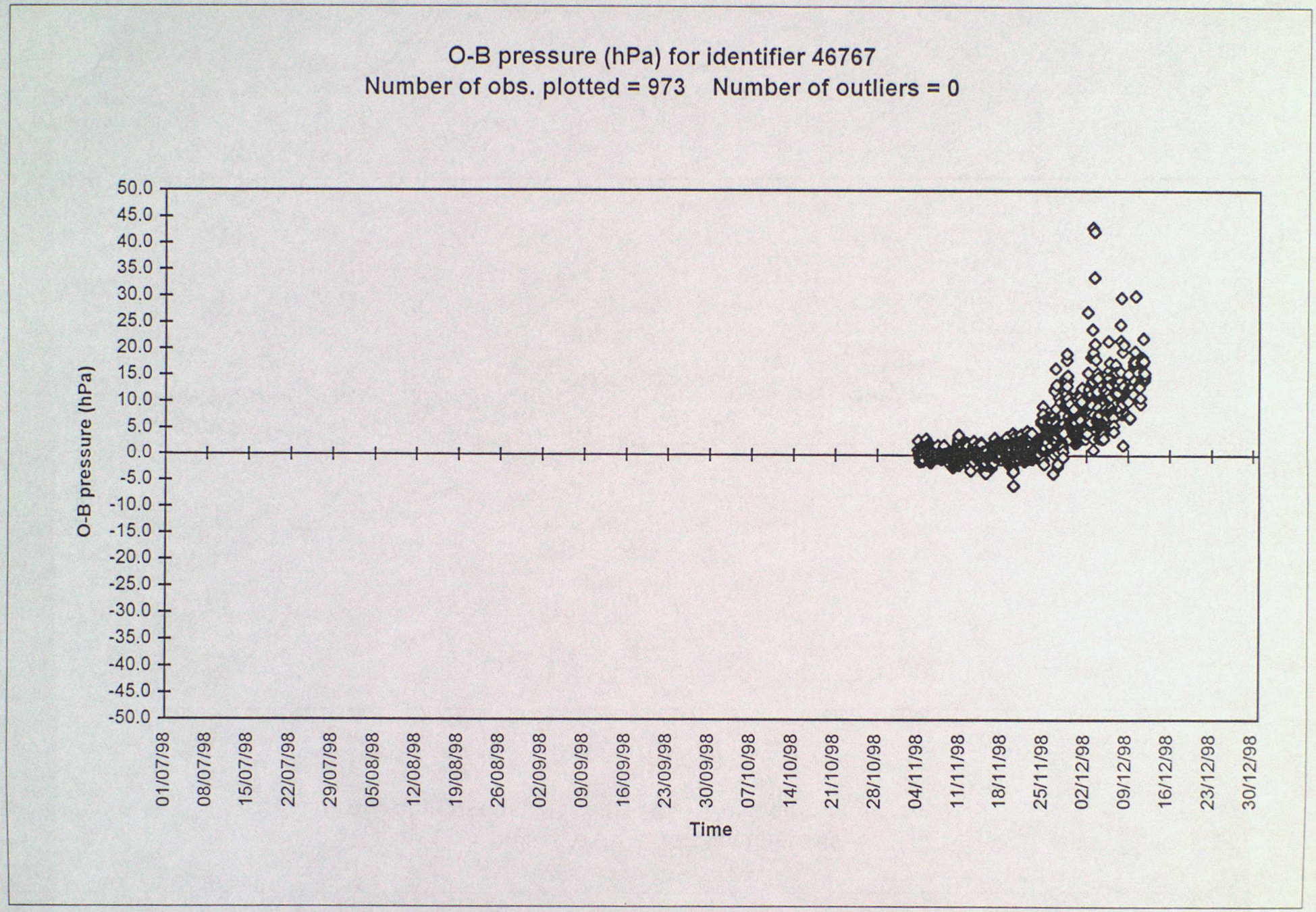
23/12/98
30/12/98


O-B pressure (hPa) for identifier 46559
Number of obs. plotted = 789 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier 46624
Number of obs. plotted = 933 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier 46767
Number of obs. plotted = 973 Number of outliers = 0
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier 46768
Number of obs. plotted = 3244 Number of outliers = 13
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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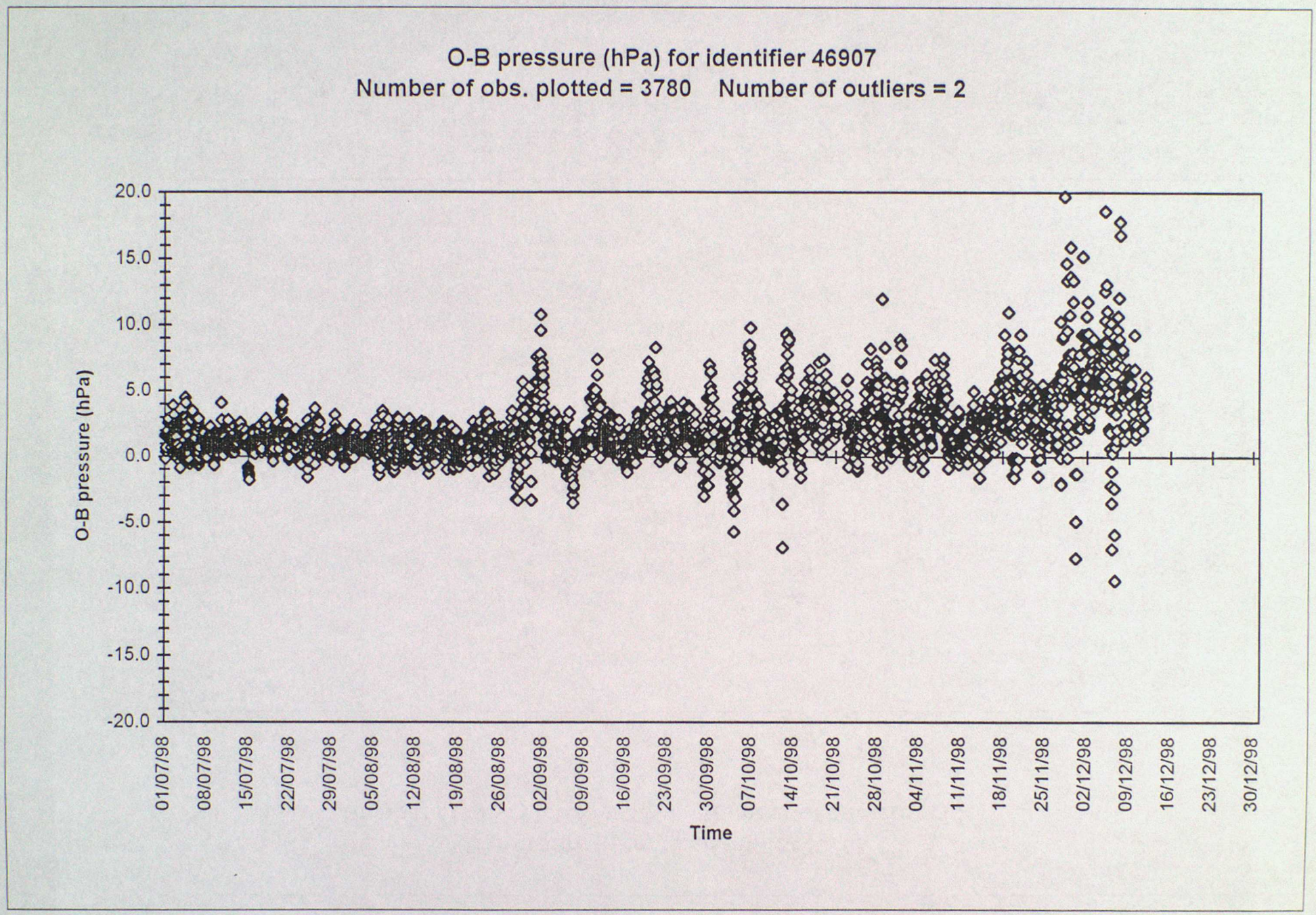
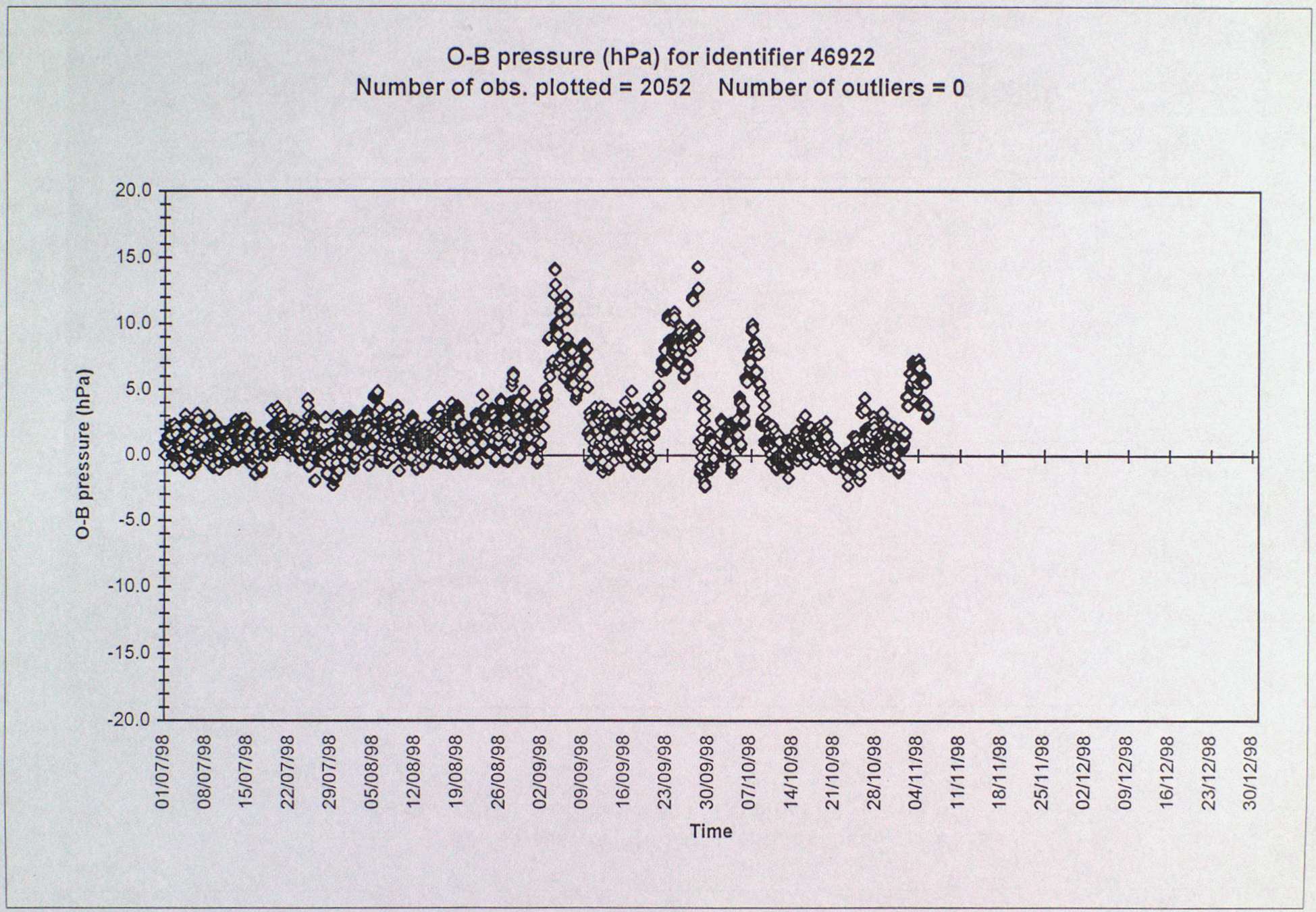
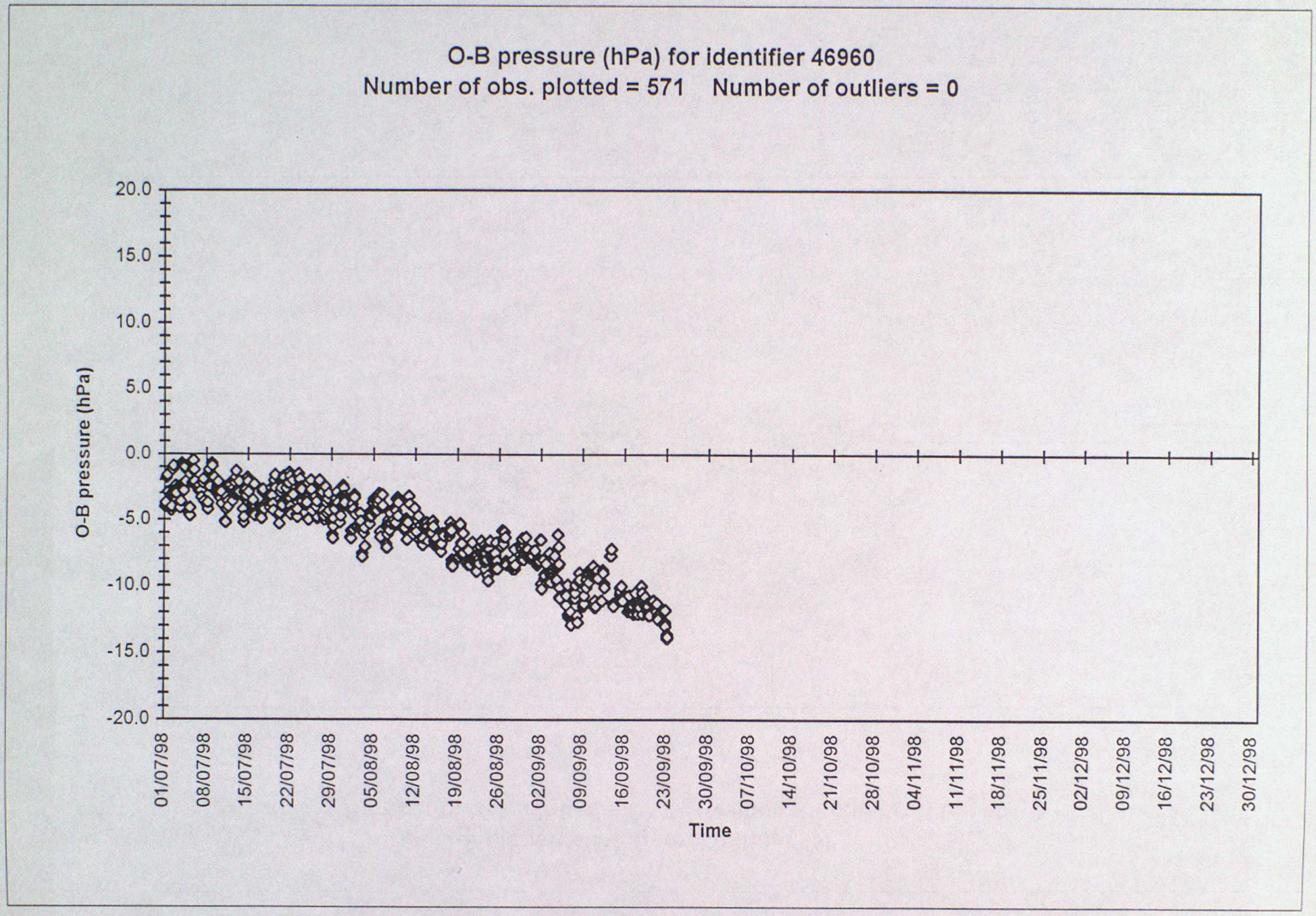
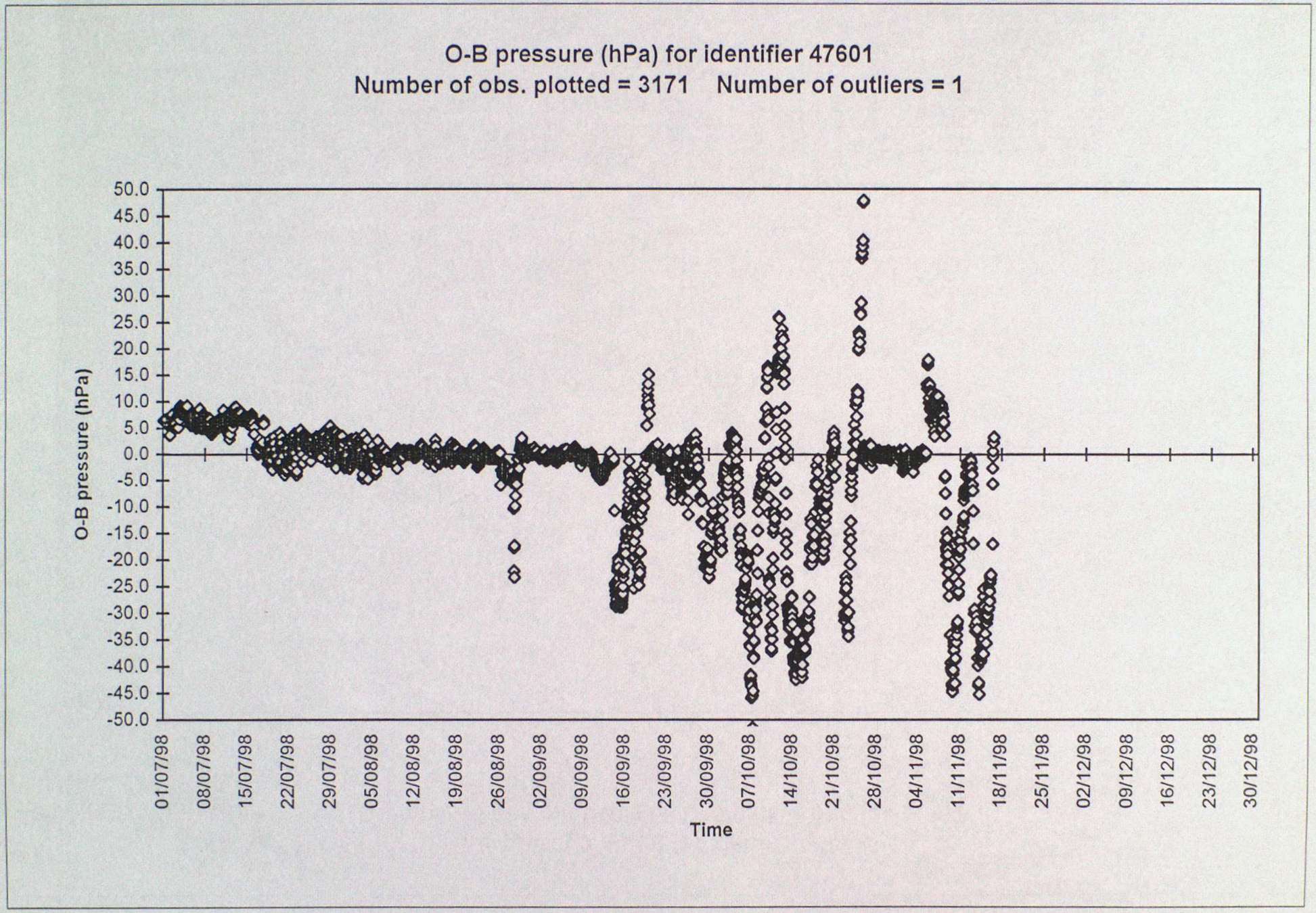
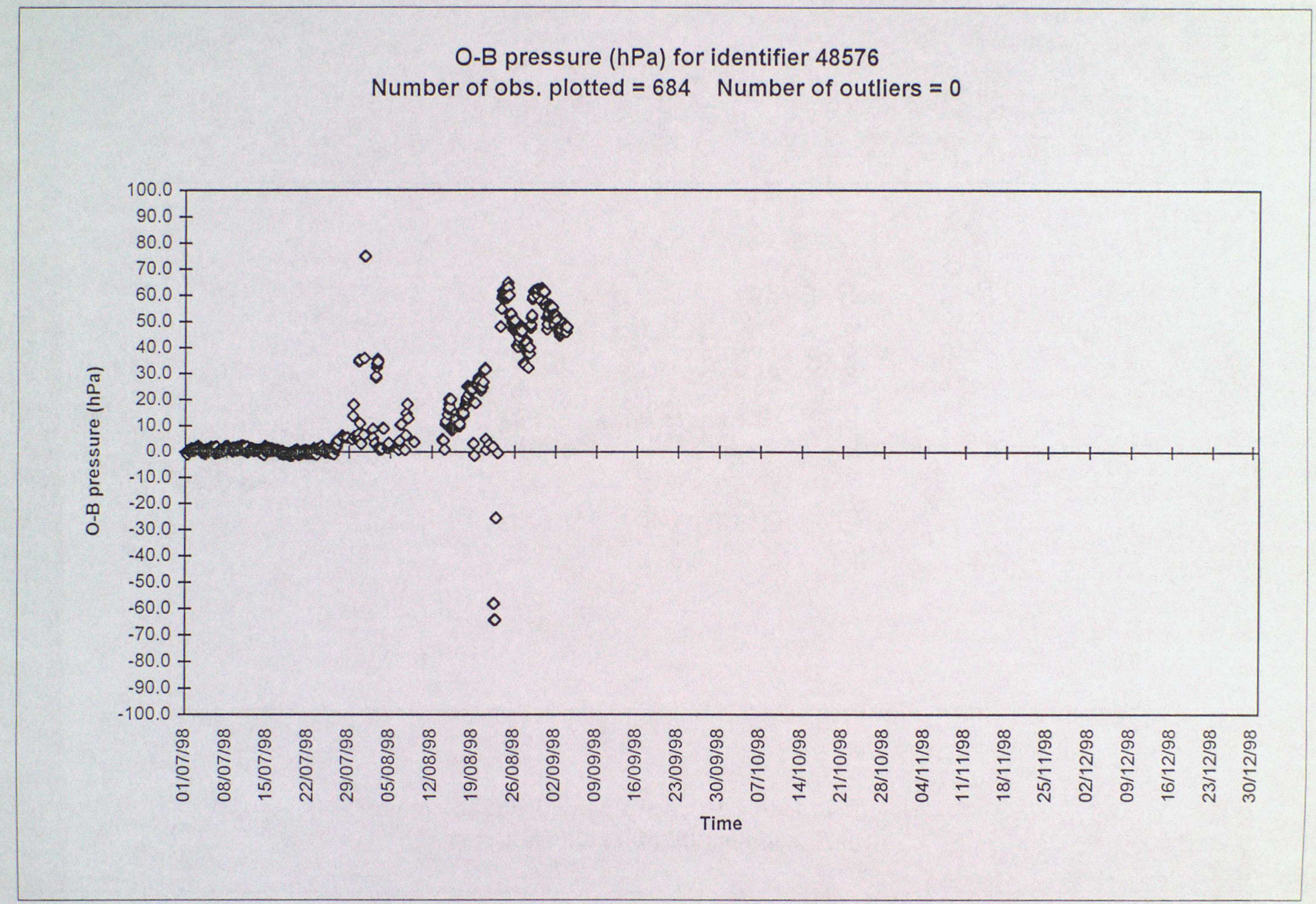
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

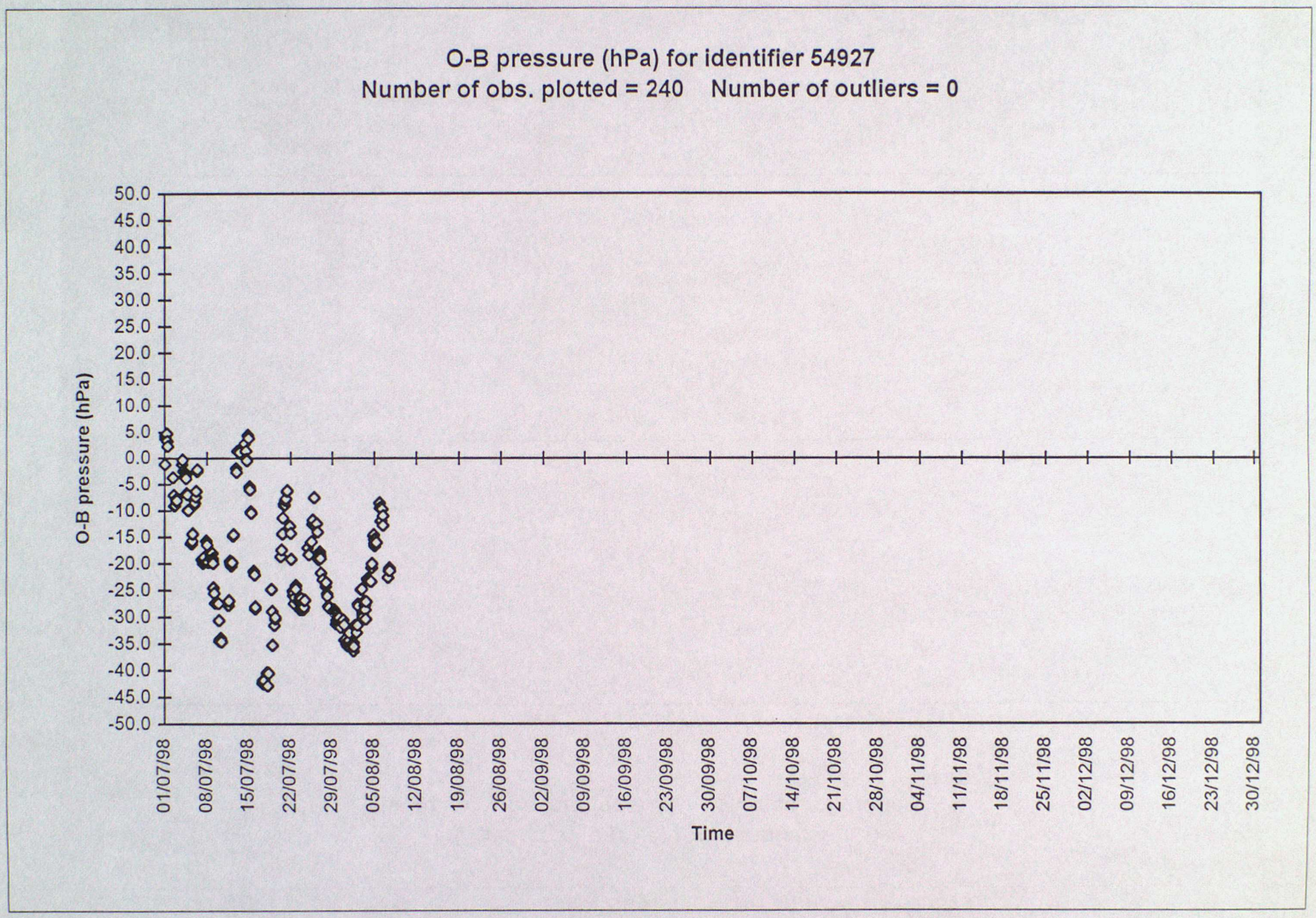

O-B pressure (hPa) for identifier 46907
Number of obs. plotted = 3780 Number of outliers = 2
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier 46922
Number of obs. plotted = 2052 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

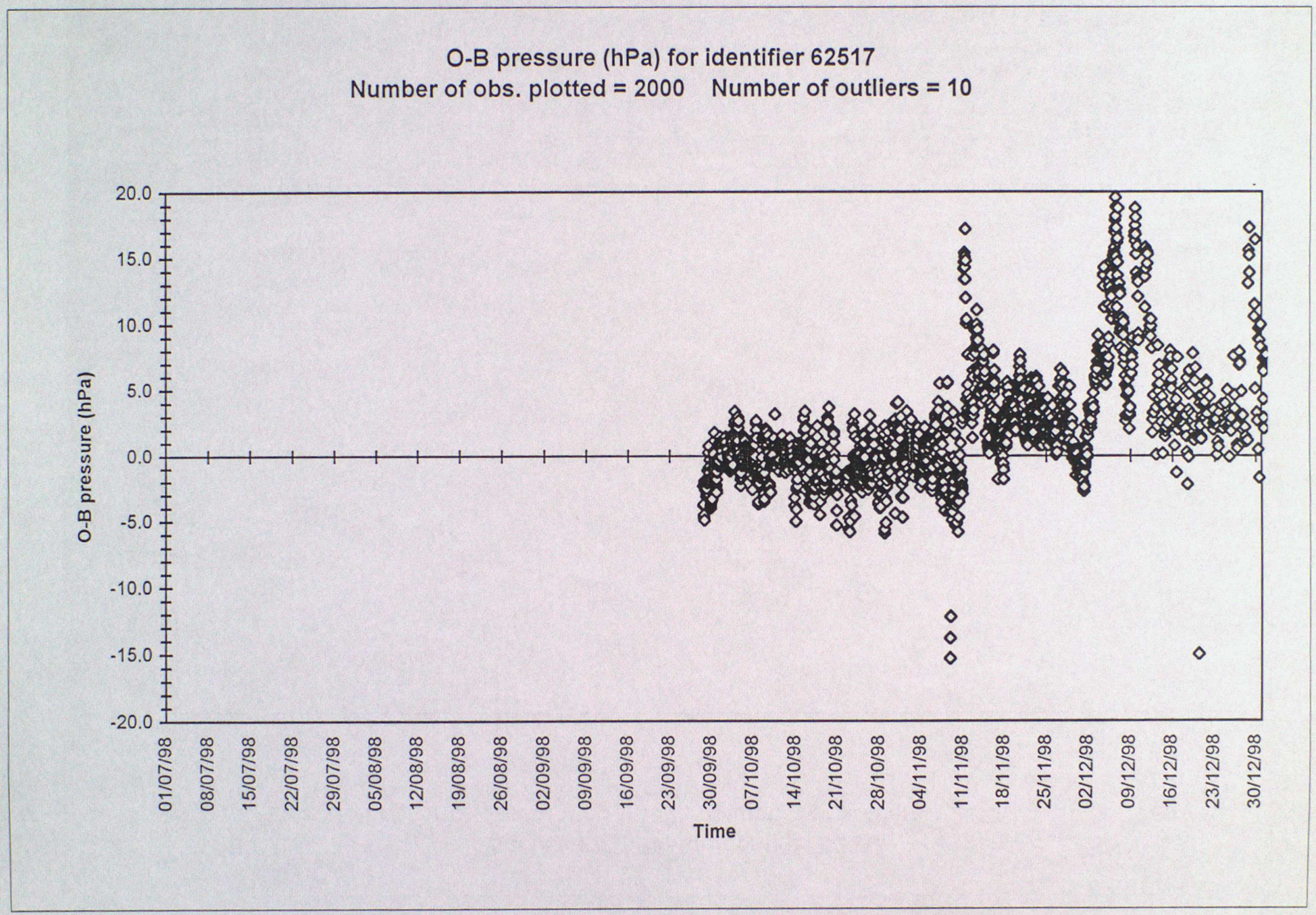

O-B pressure (hPa) for identifier 46960
Number of obs. plotted = 571 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

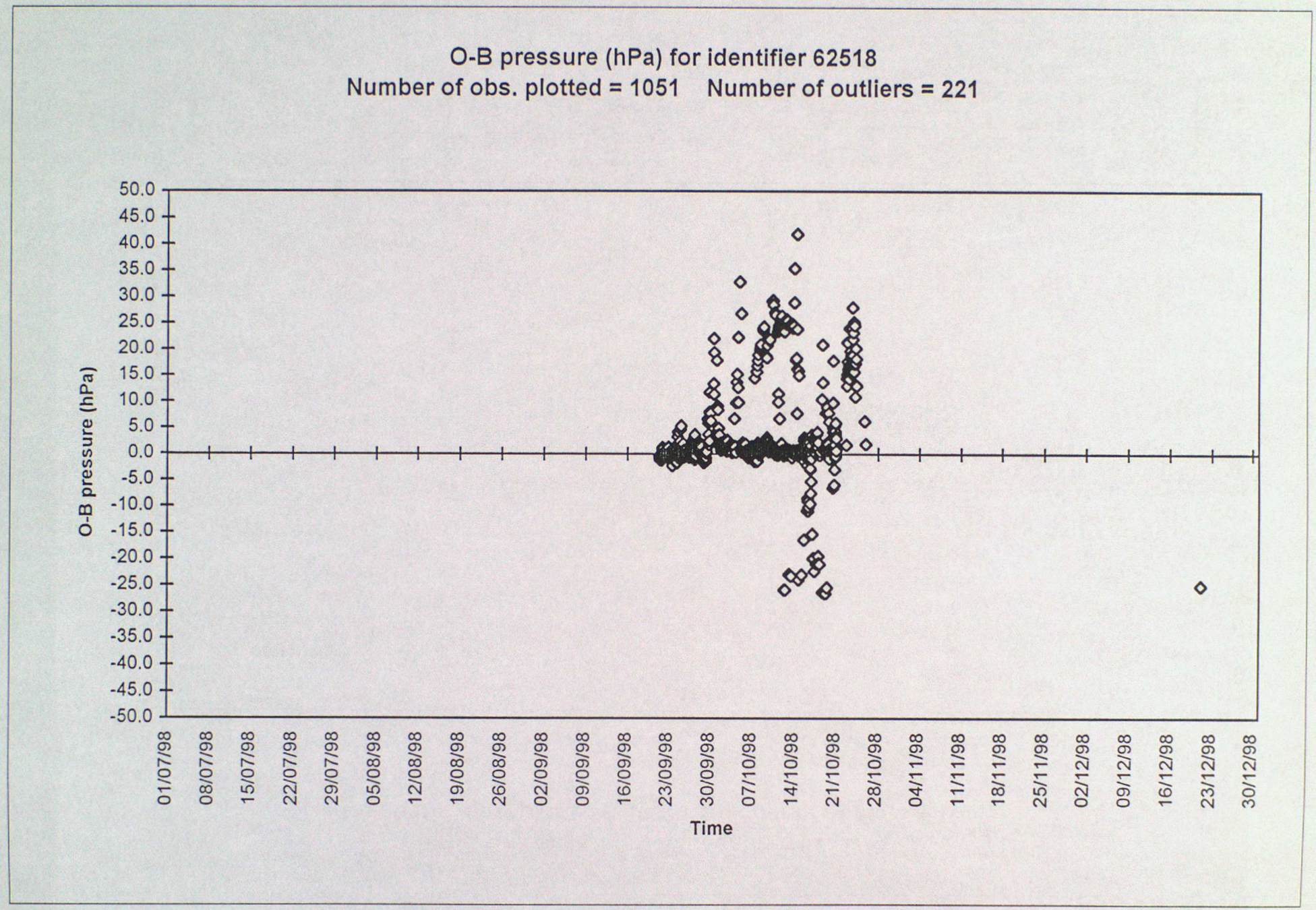

O-B pressure (hPa) for identifier 47601
Number of obs. plotted = 3171 Number of outliers = 1
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

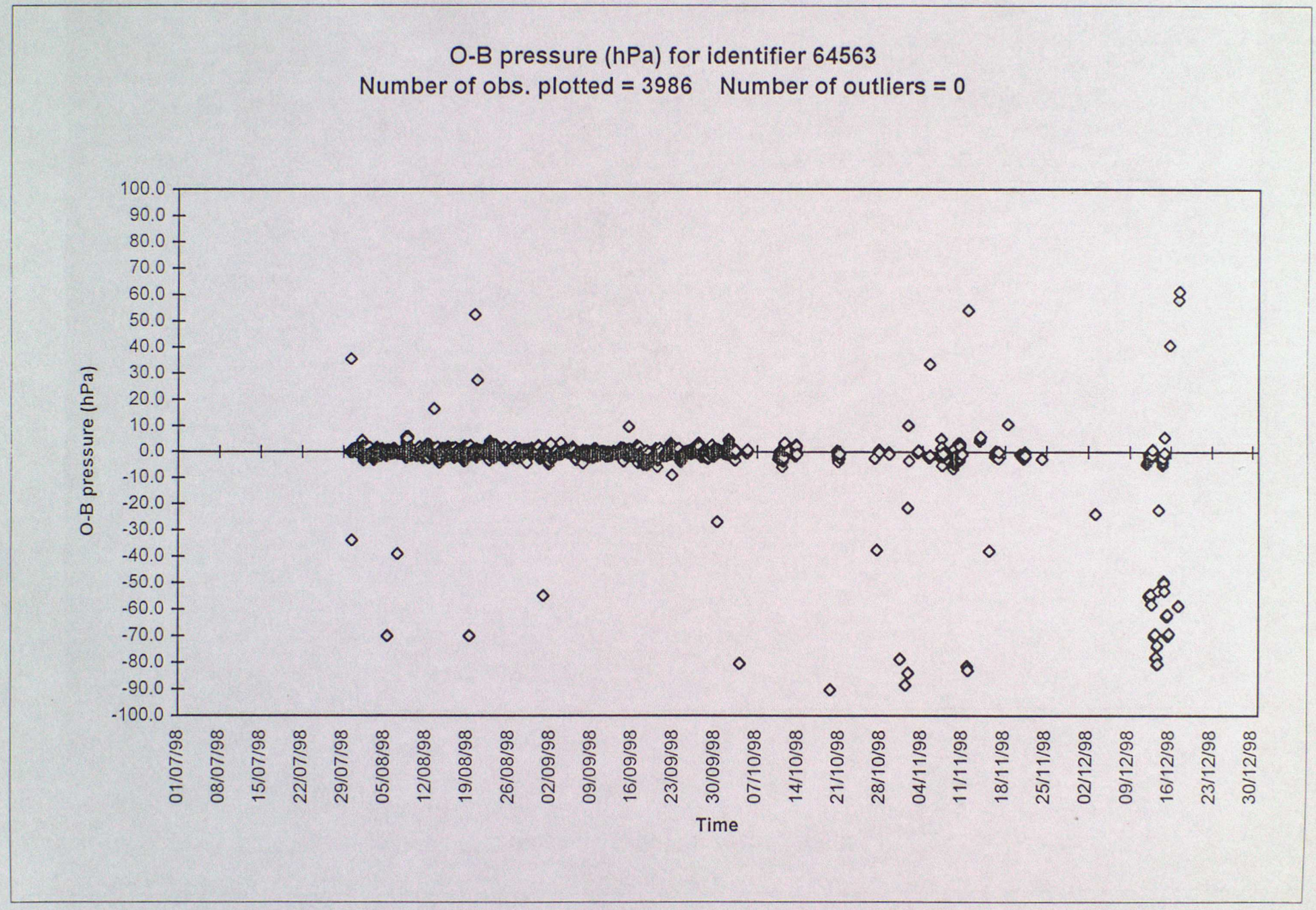

O-B pressure (hPa) for identifier 48576
Number of obs. plotted = 684 Number of outliers = 0
O-B pressure (hPa)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

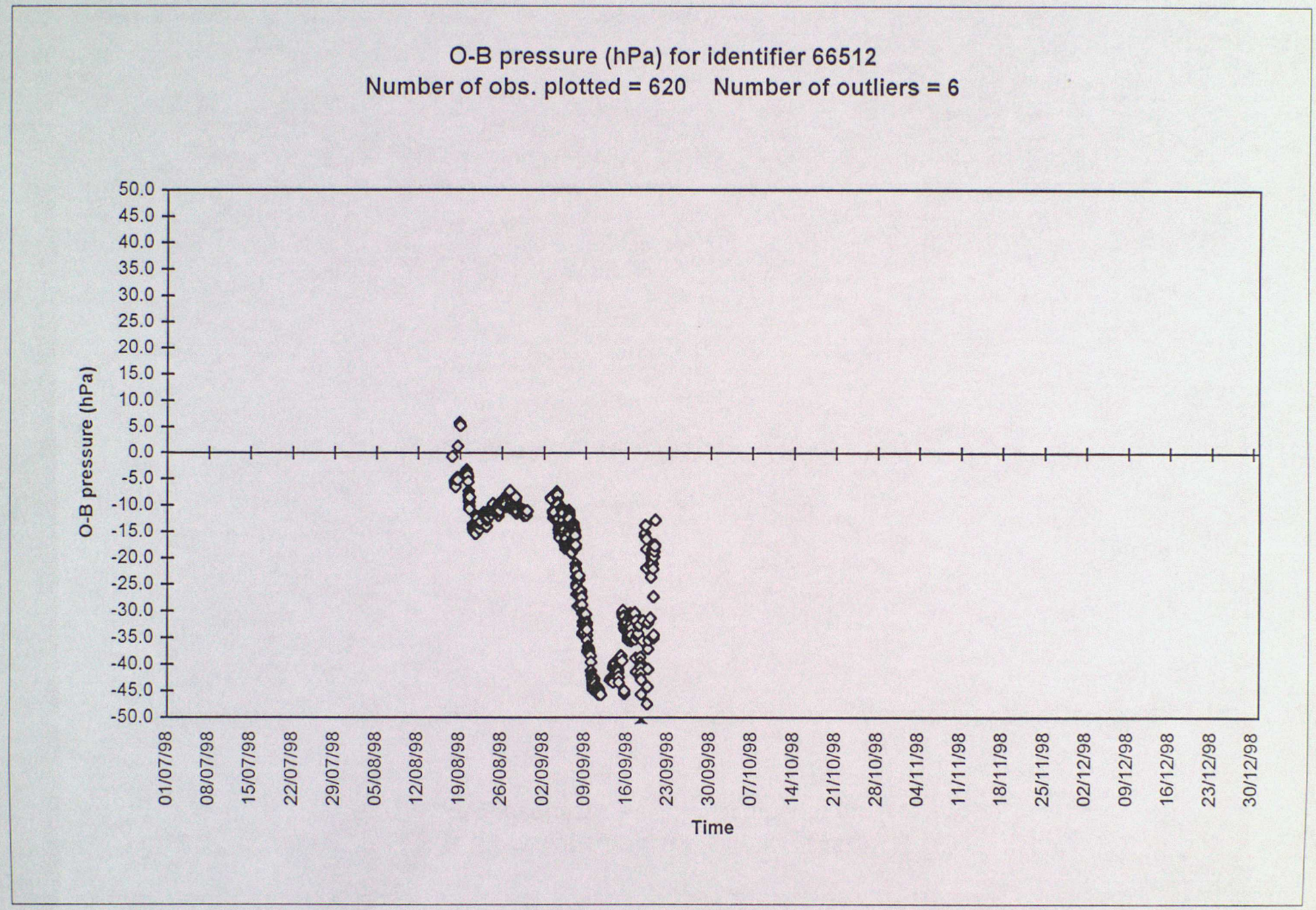

O-B pressure (hPa) for identifier 54927
Number of obs. plotted = 240 Number of outliers = 0
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

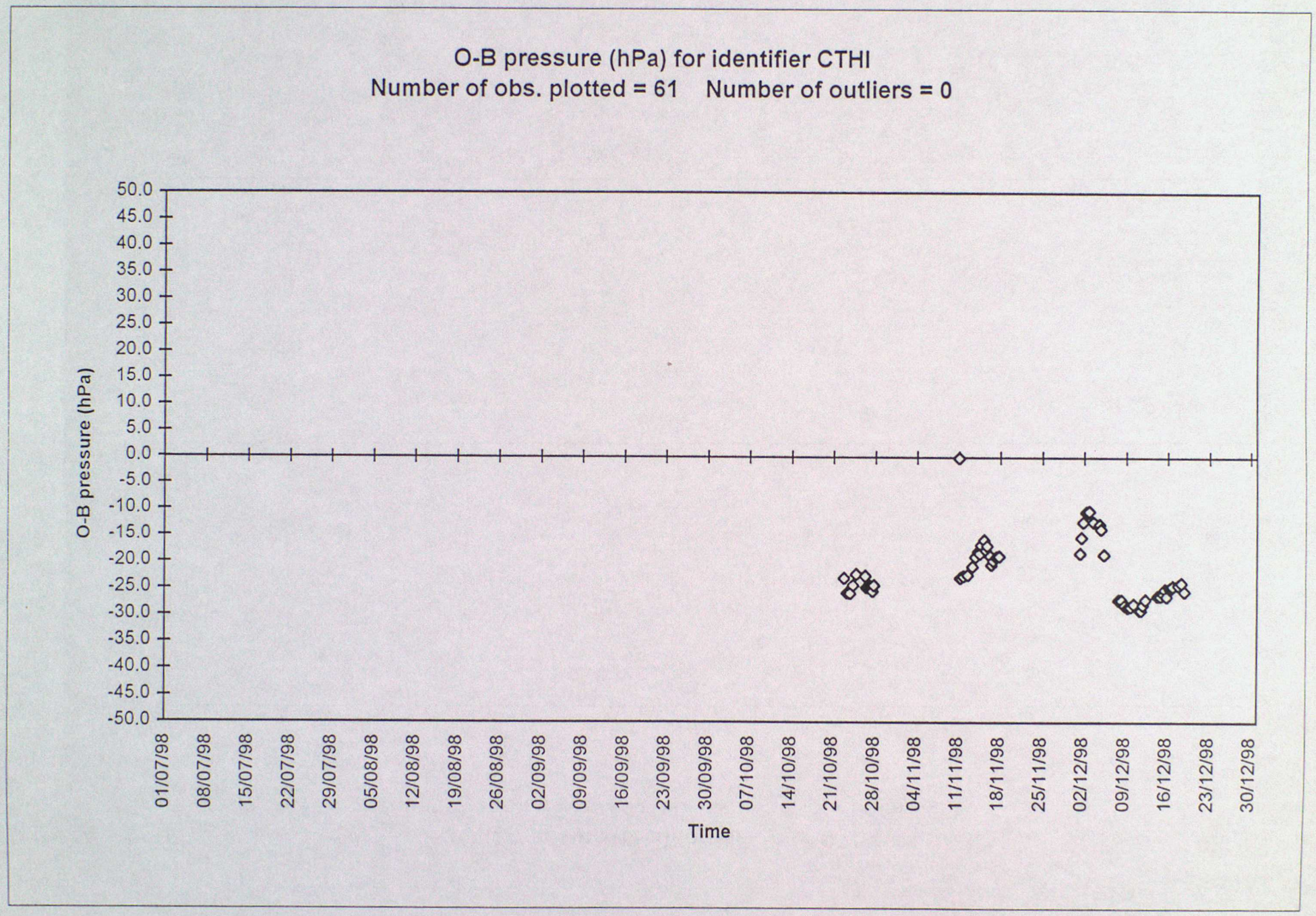
O-B pressure (hPa) for identifier 56531
Number of obs. plotted = 259 Number of outliers = 6
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

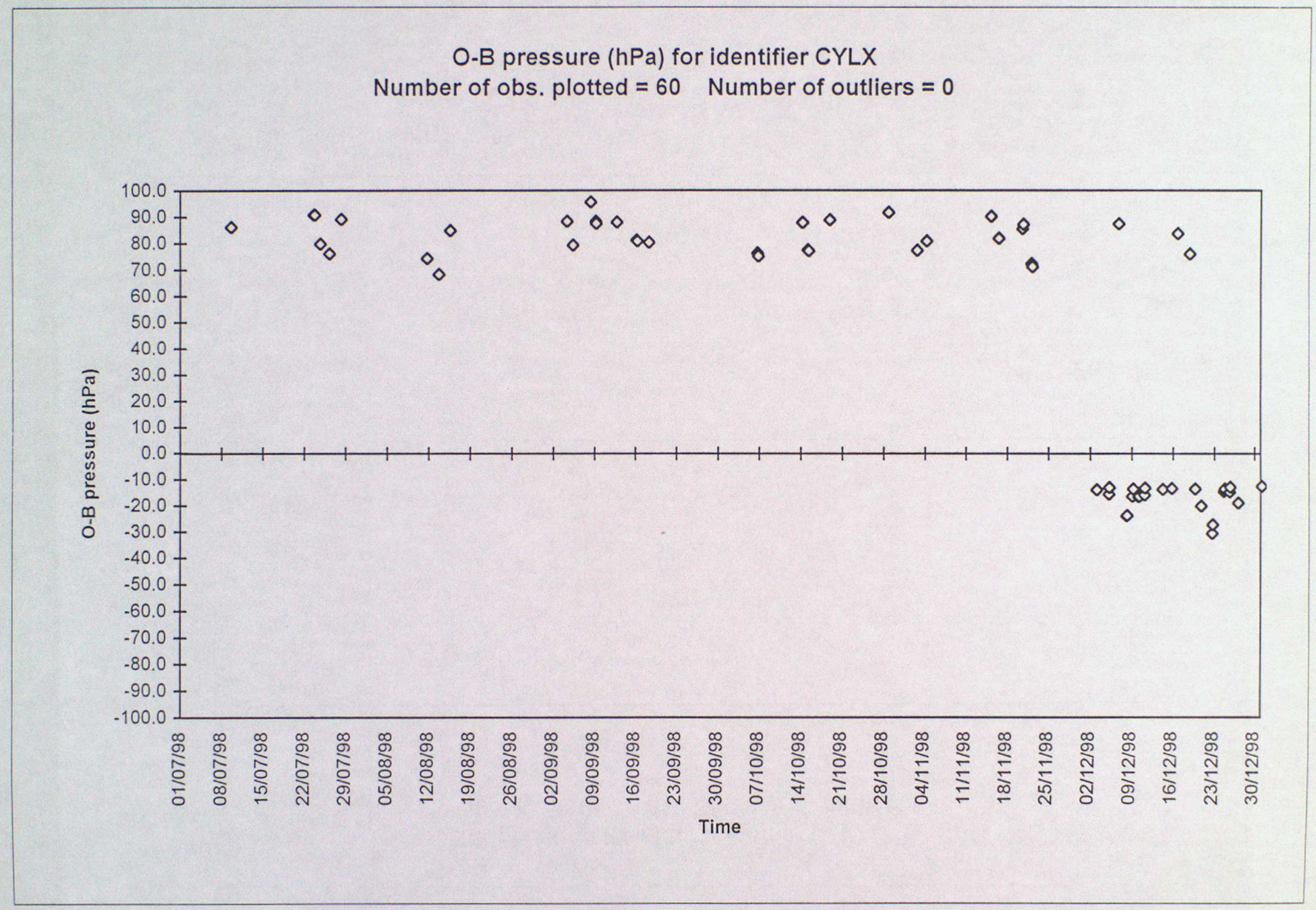

O-B pressure (hPa) for identifier 62517
Number of obs. plotted = 2000 Number of outliers = 10
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

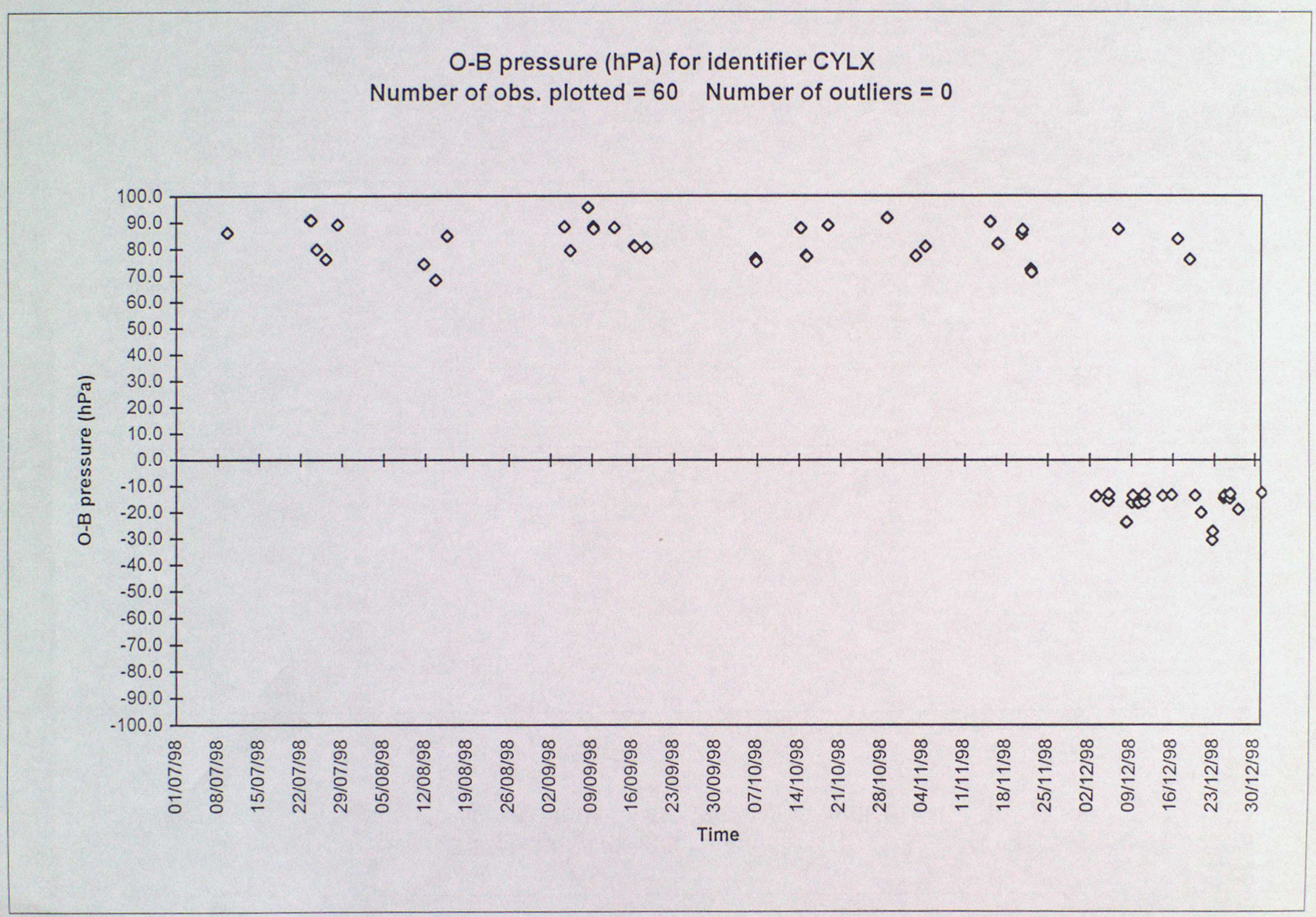

O-B pressure (hPa) for identifier 62518
Number of obs. plotted = 1051 Number of outliers = 221
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

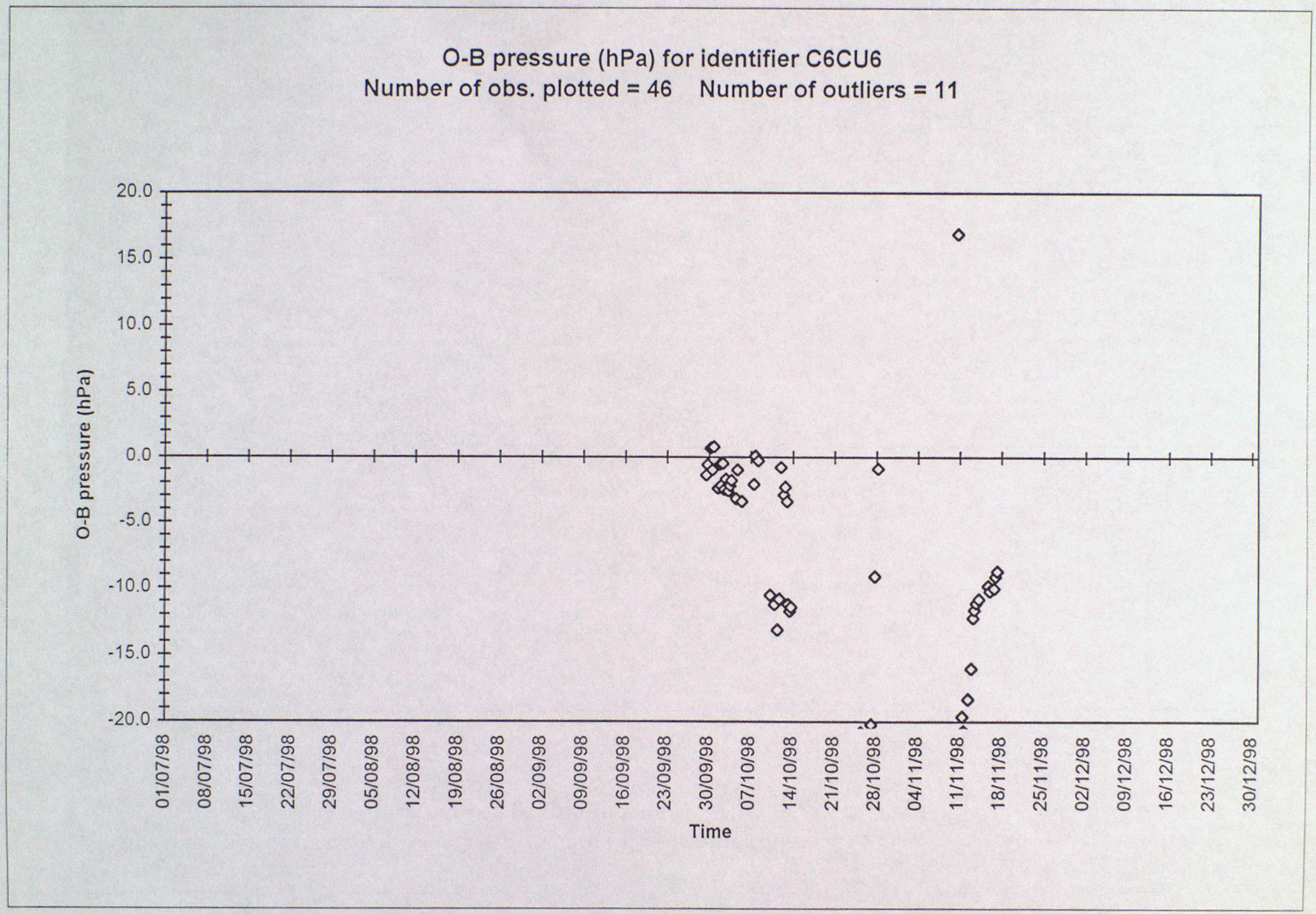

O-B pressure (hPa) for identifier 64563
Number of obs. plotted = 3986 Number of outliers = 0
O-B pressure (hPa)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

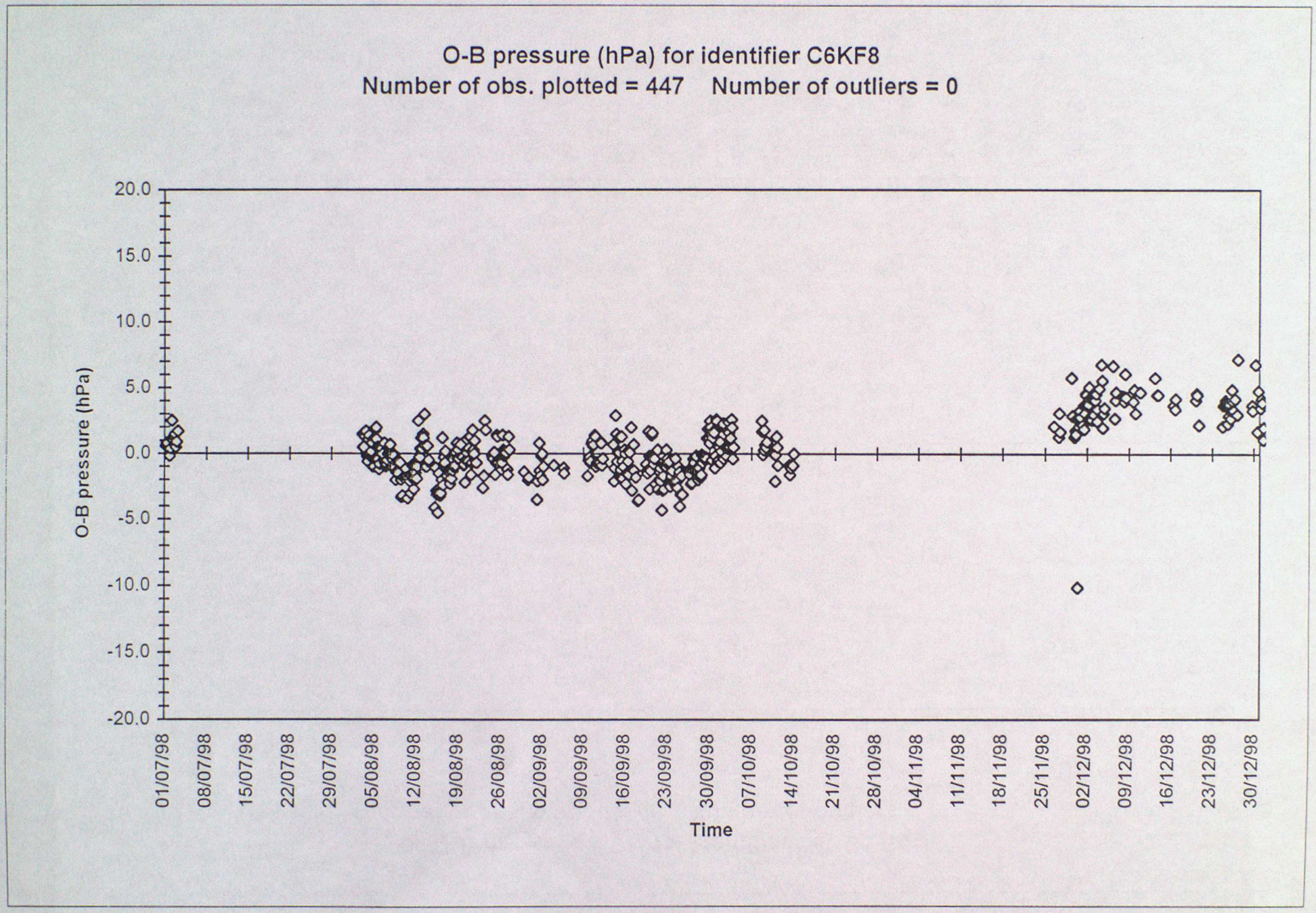

O-B pressure (hPa) for identifier 66512
Number of obs. plotted = 620 Number of outliers = 6
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

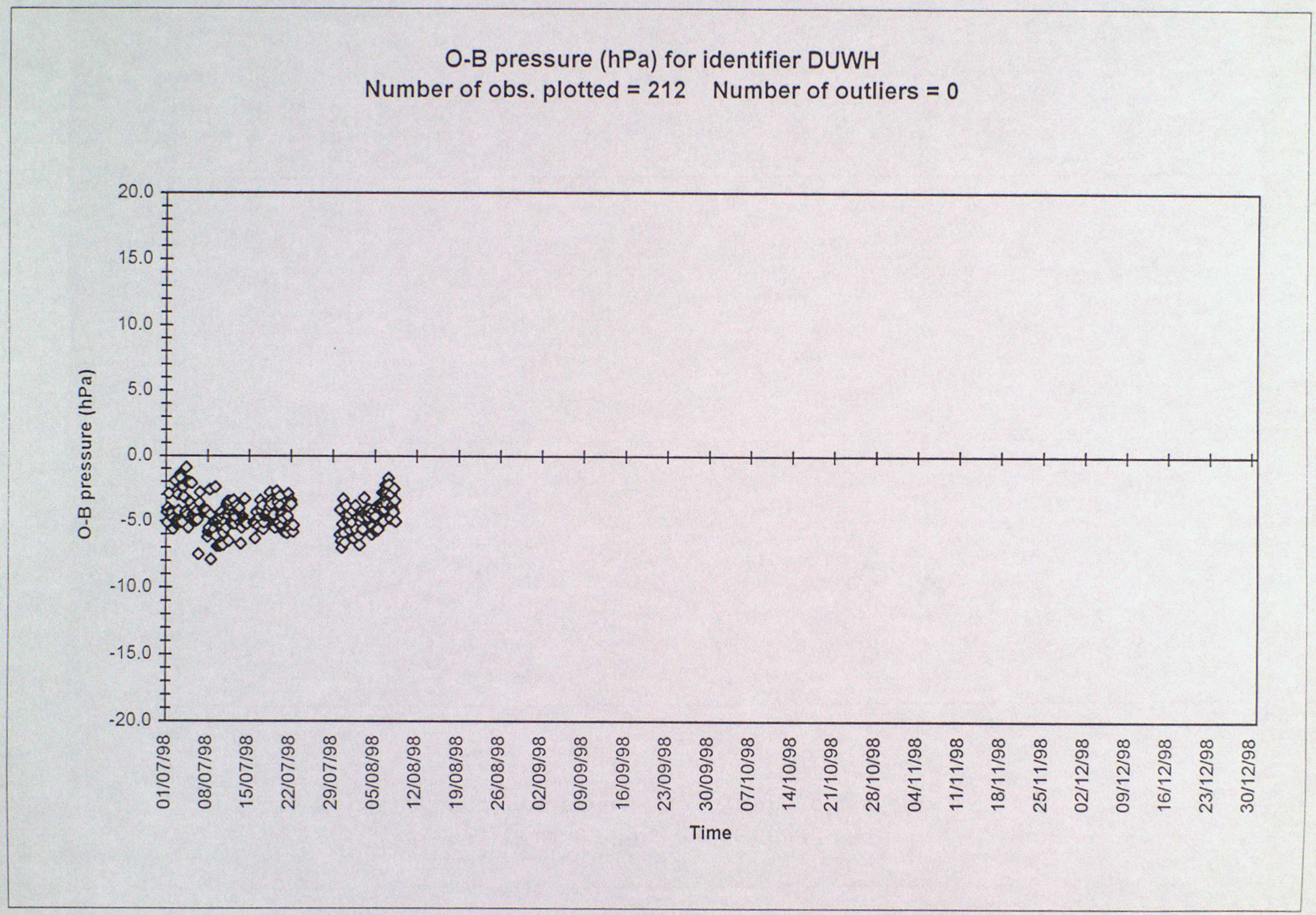

O-B pressure (hPa) for identifier CTHI
Number of obs. plotted = 61 Number of outliers = 0
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier CYLX
Number of obs. plotted = 60 Number of outliers = 0
O-B pressure (hPa)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier CYLX
Number of obs. plotted = 60 Number of outliers = 0
O-B pressure (hPa)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier C6CU6
Number of obs. plotted = 46 Number of outliers = 11
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier C6KF8
Number of obs. plotted = 447 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier DUWH
Number of obs. plotted = 212 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier ELRT5
Number of obs. plotted = 90 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier ELTE8
Number of obs. plotted = 59 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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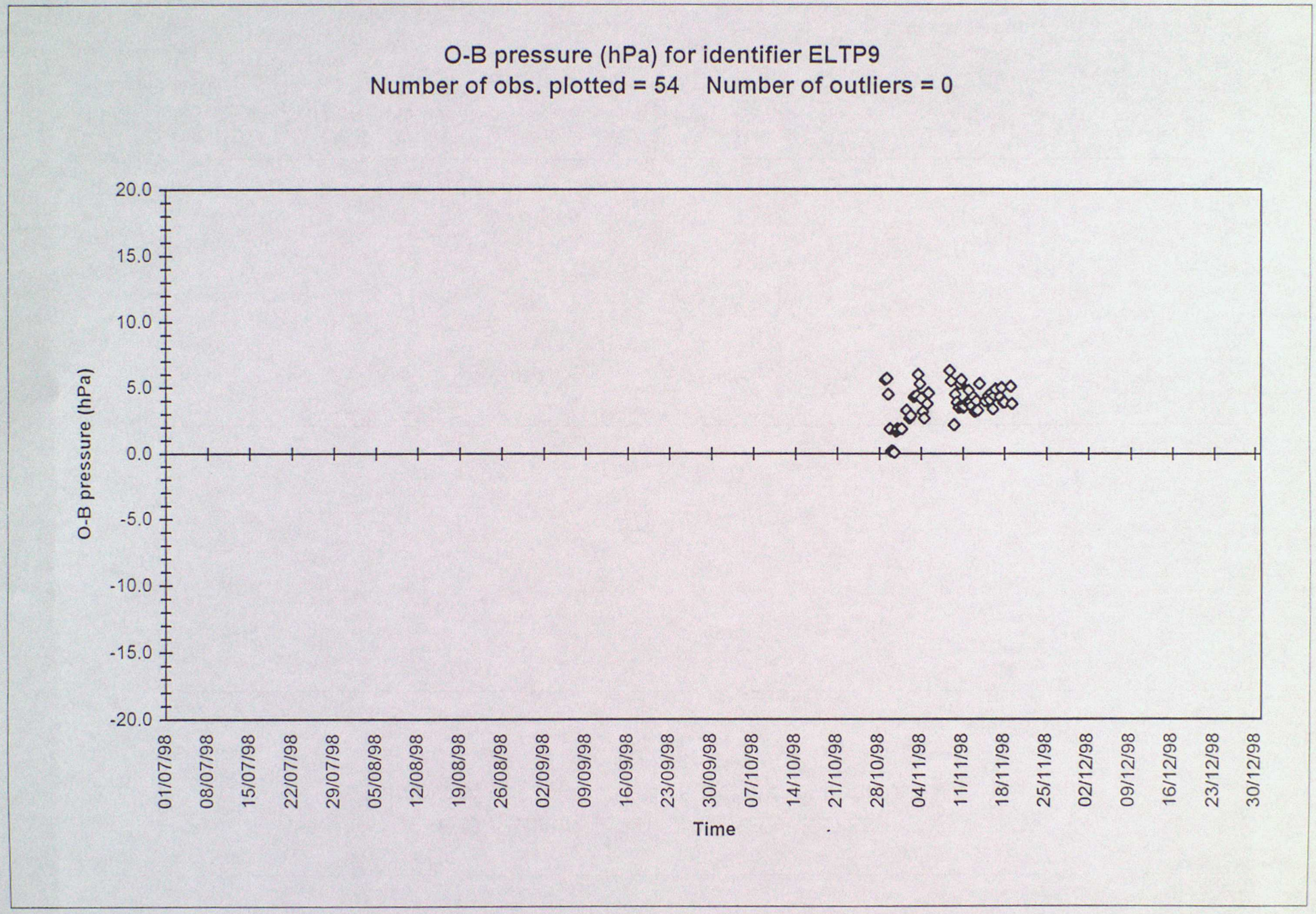
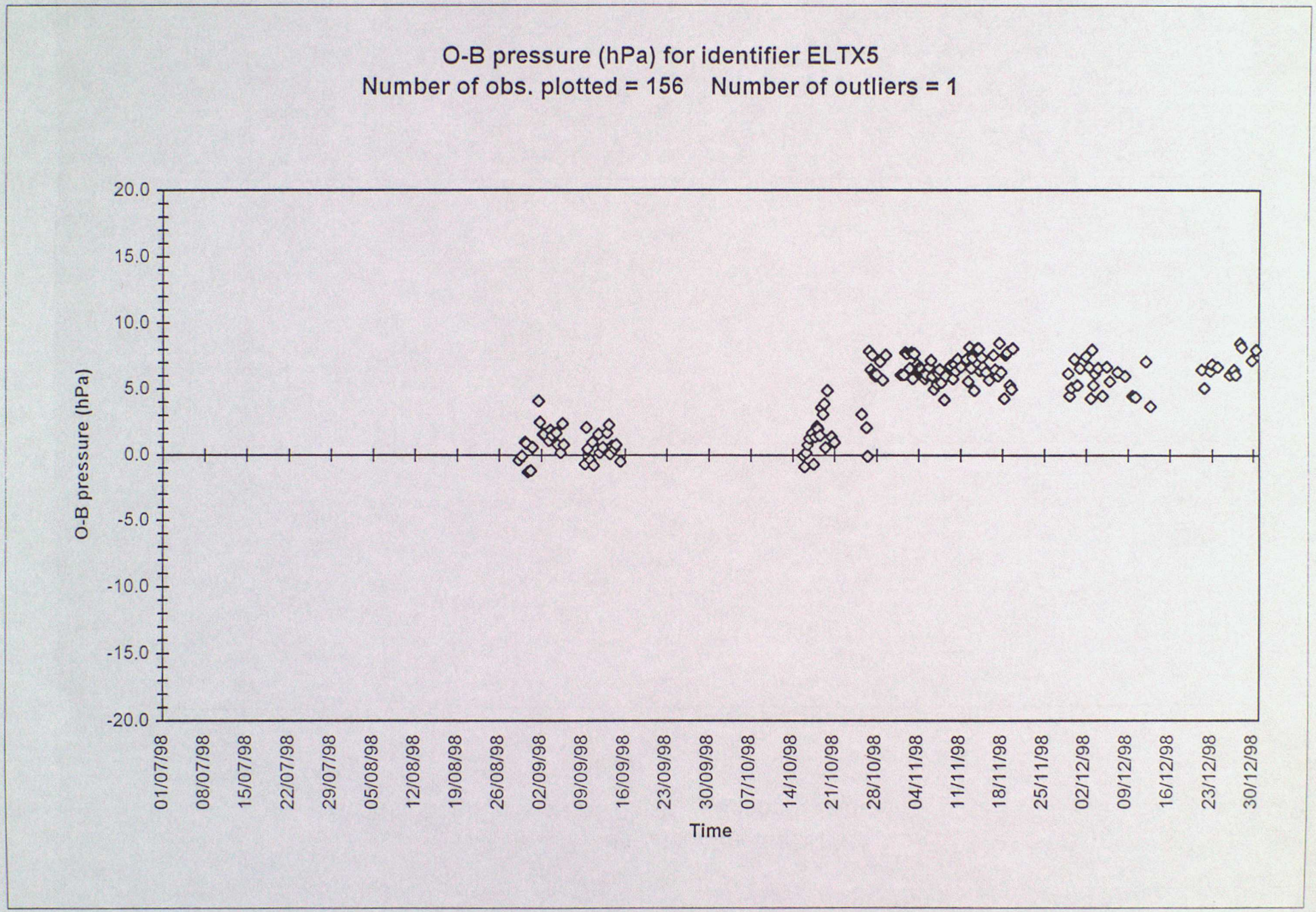
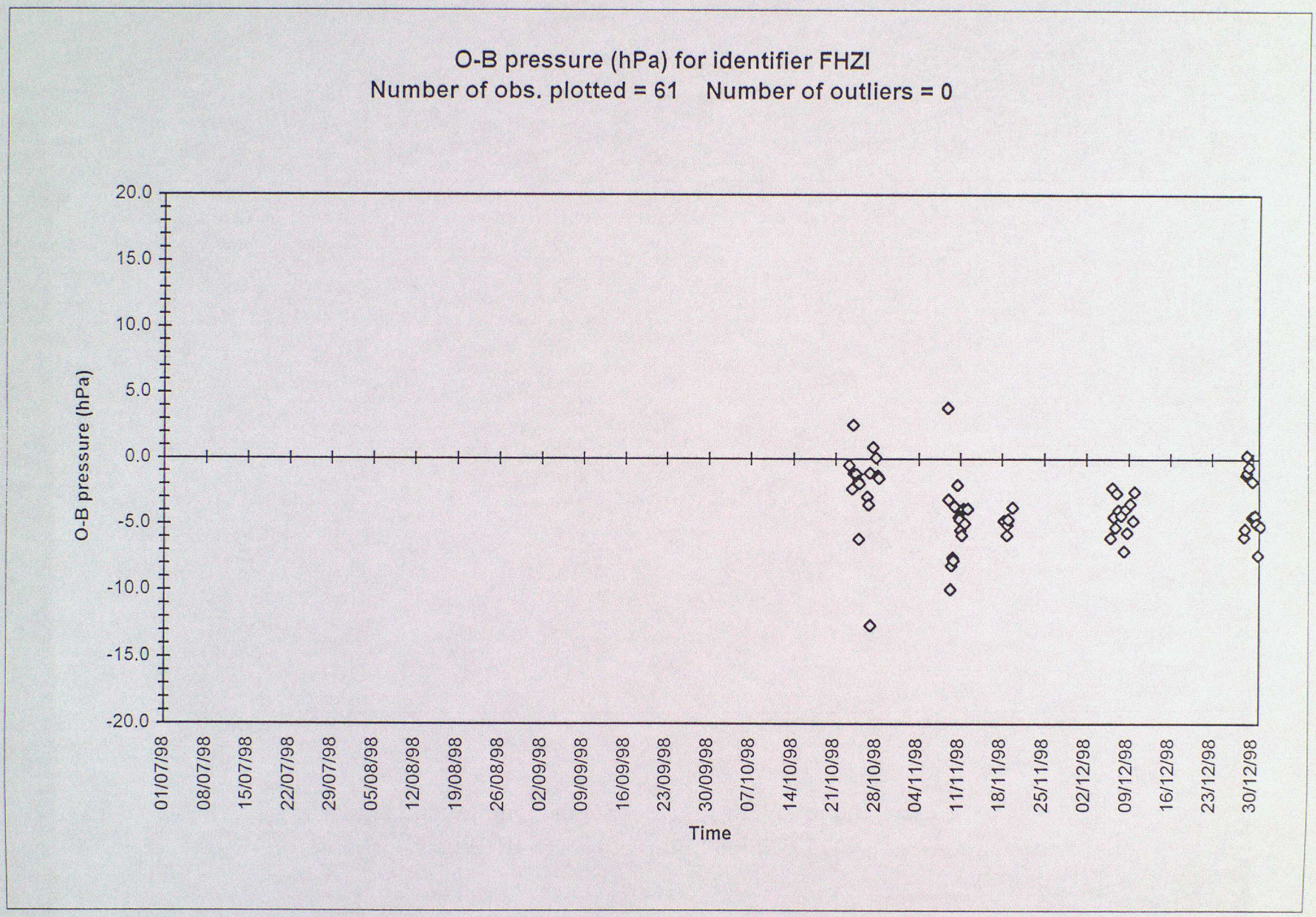
09/12/98
16/12/98
23/12/98
30/12/98


O-B pressure (hPa) for identifier ELTP9
Number of obs. plotted = 54 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier ELTX5
Number of obs. plotted = 156 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier FHZI
Number of obs. plotted = 61 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier FZOP
Number of obs. plotted = 398 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier LAWR2
Number of obs. plotted = 104 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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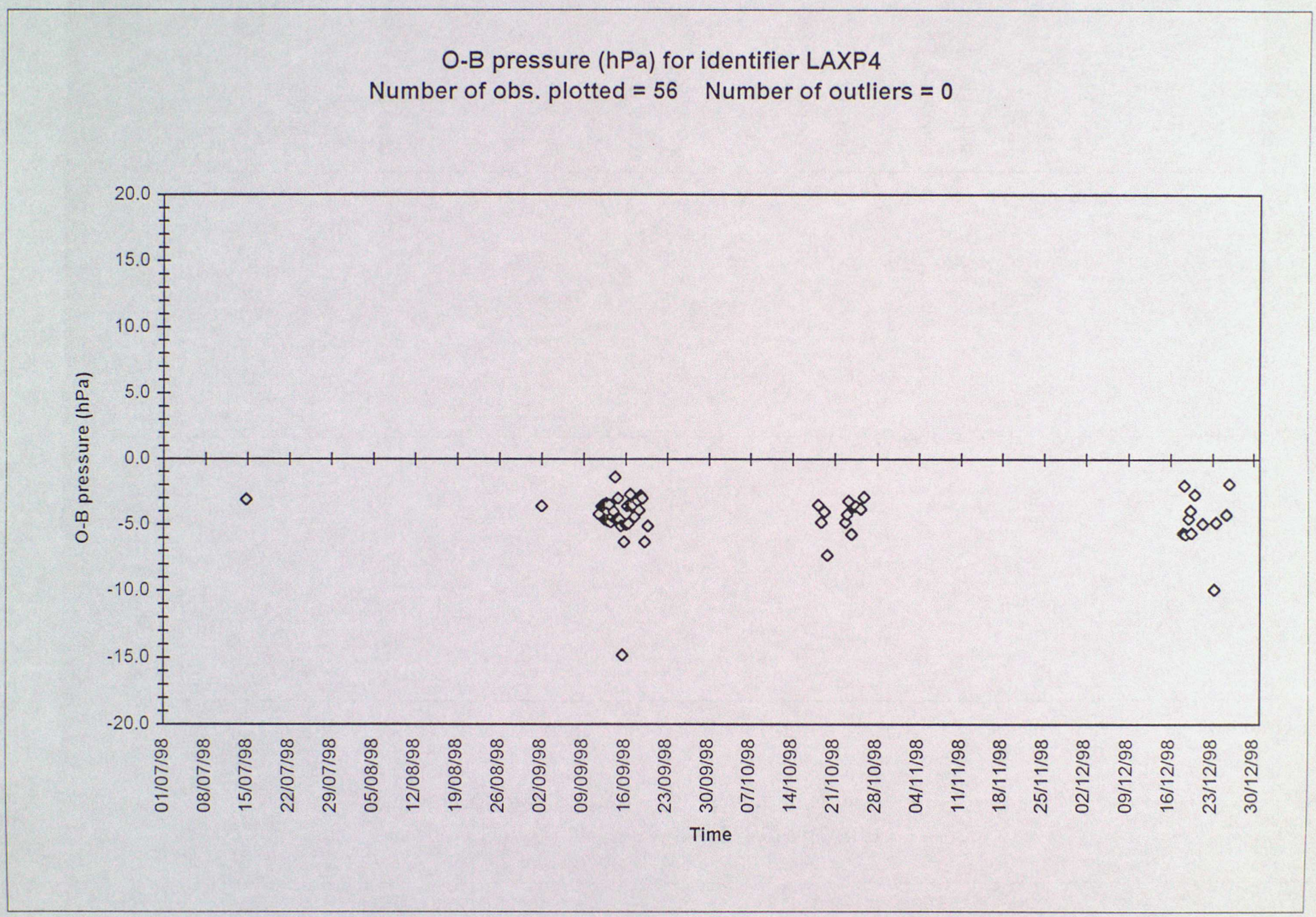
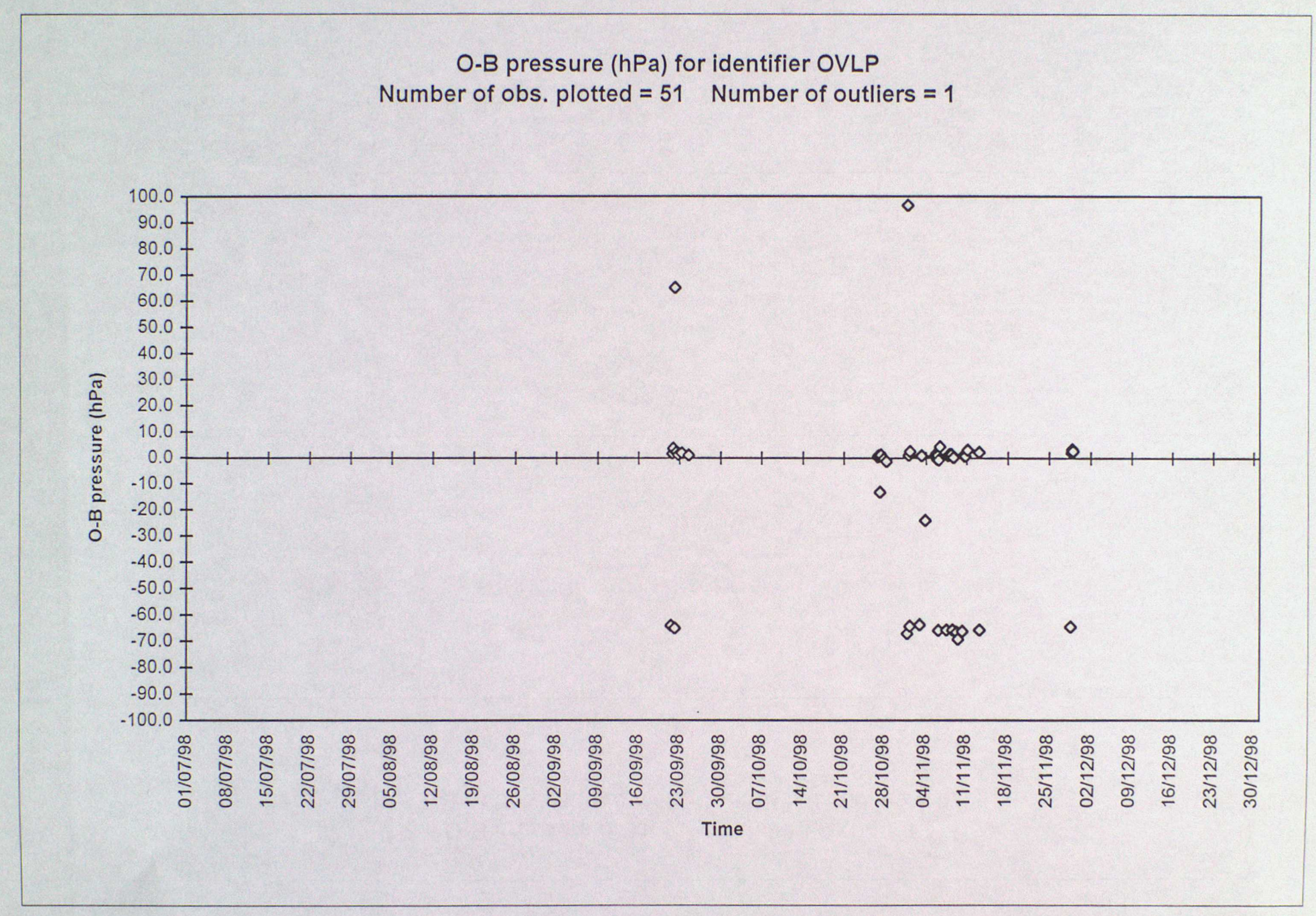
16/12/98
23/12/98
30/12/98

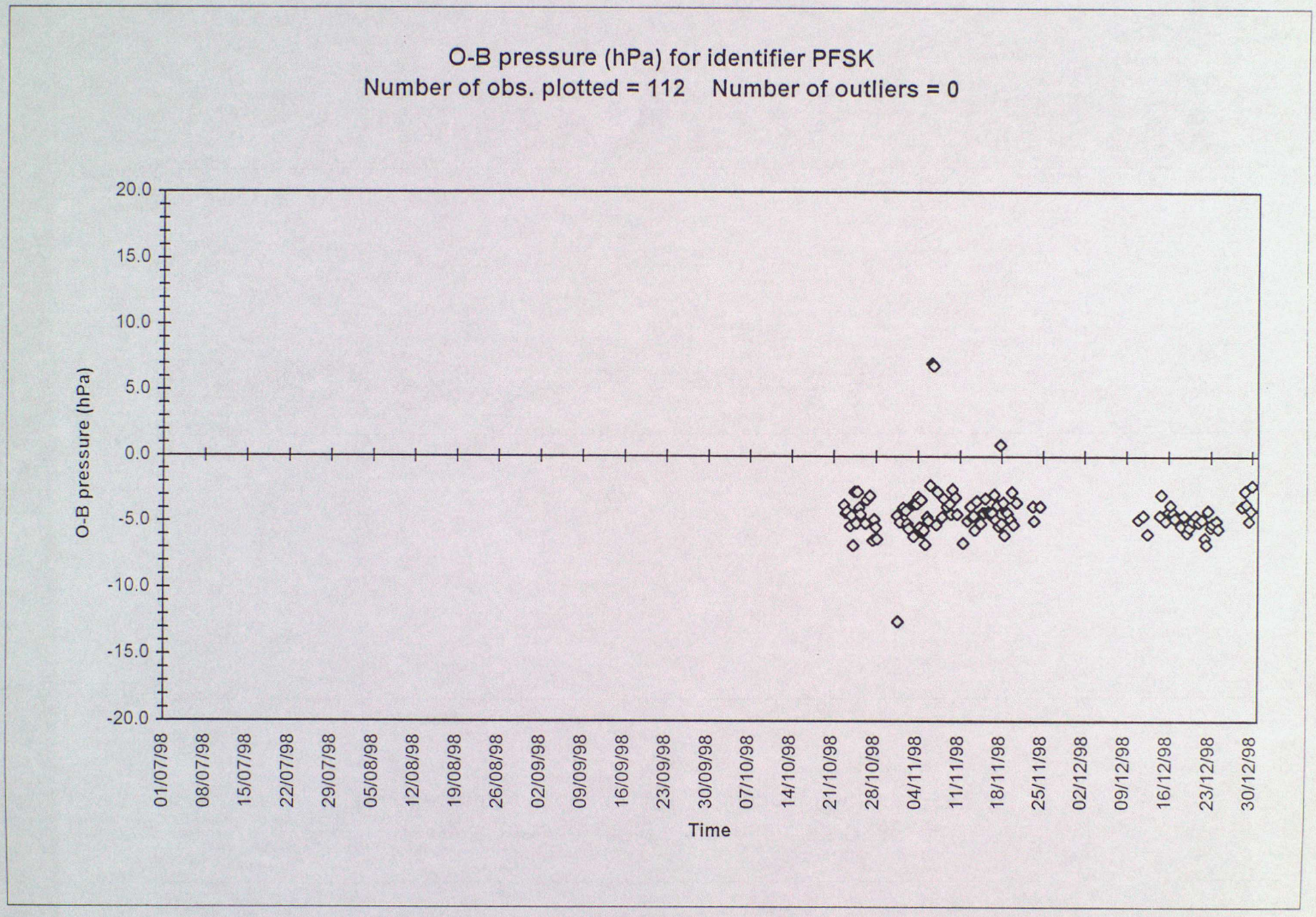

O-B pressure (hPa) for identifier LAXP4
Number of obs. plotted = 56 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

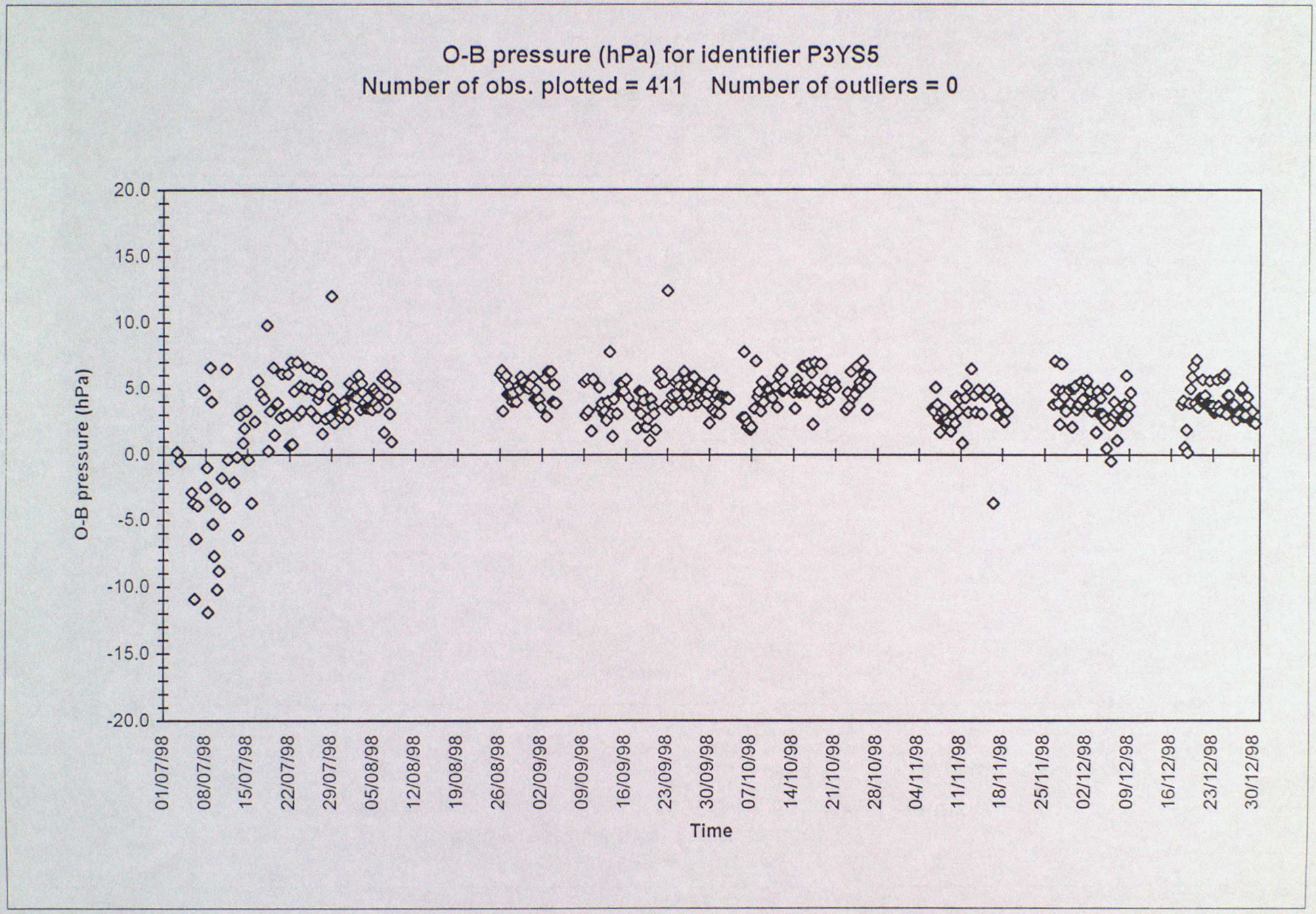

O-B pressure (hPa) for identifier OVLP
Number of obs. plotted = 51 Number of outliers = 1
O-B pressure (hPa)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

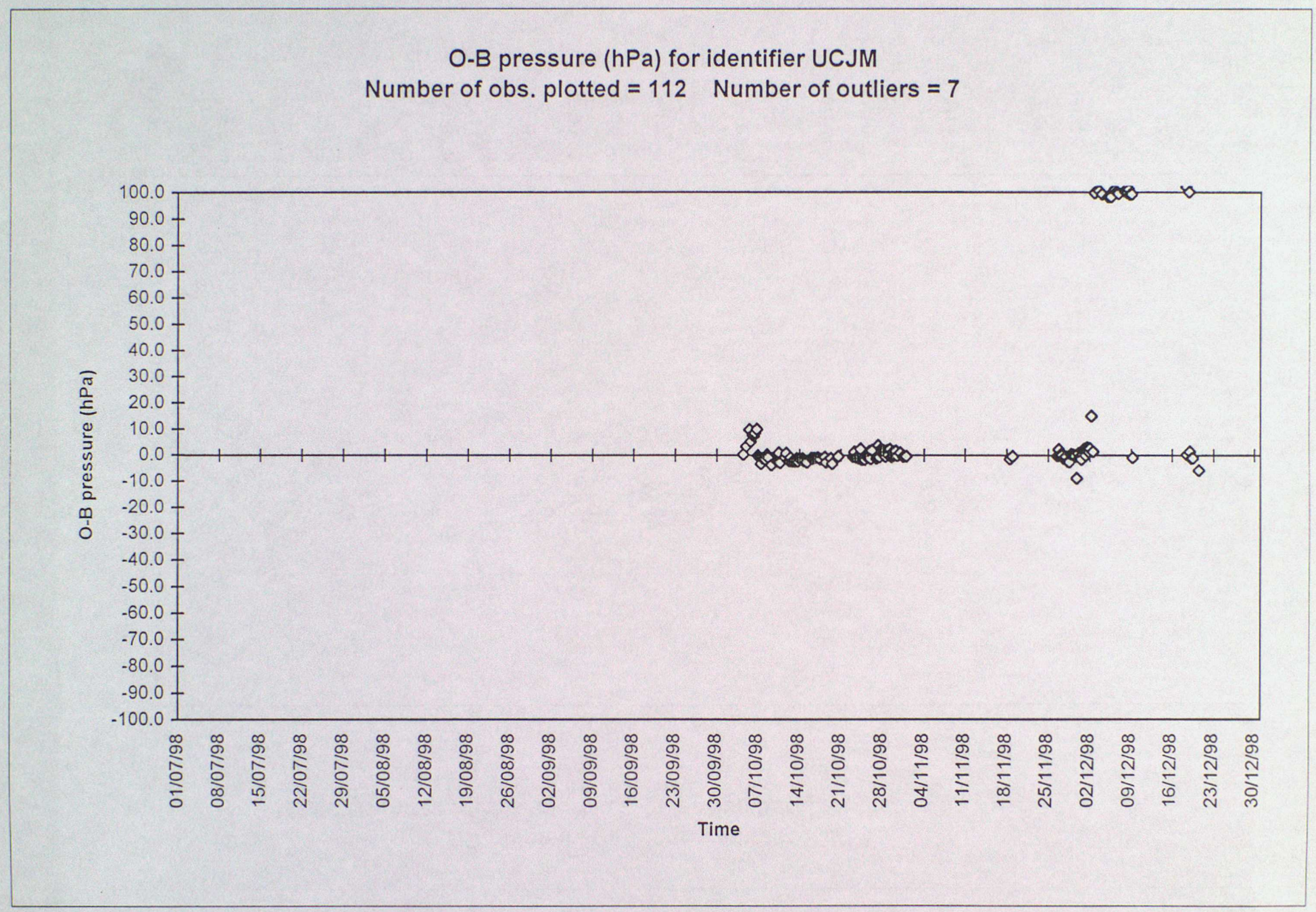
O-B pressure (hPa) for identifier PCCZ
Number of obs. plotted = 87 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

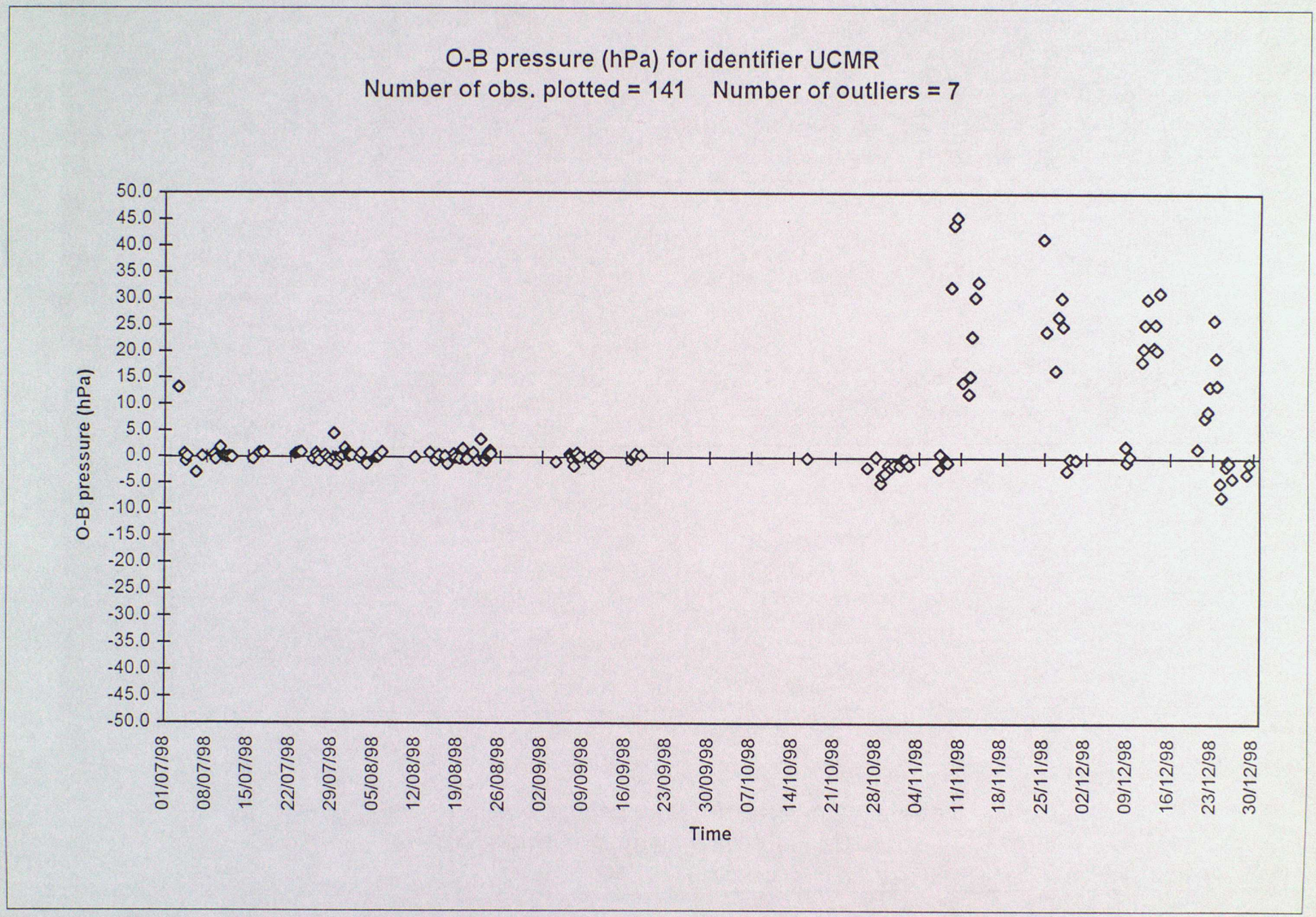
O-B pressure (hPa) for identifier PCEX
Number of obs. plotted = 78 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier PEXX
Number of obs. plotted = 161 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98


O-B pressure (hPa) for identifier PFSK
Number of obs. plotted = 112 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier P3YS5
Number of obs. plotted = 411 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier UCJM
Number of obs. plotted = 112 Number of outliers = 7
O-B pressure (hPa)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier UCMR
Number of obs. plotted = 141 Number of outliers = 7
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier UDTH
Number of obs. plotted = 133 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier UDVB
Number of obs. plotted = 42 Number of outliers = 2
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier UFJJ
Number of obs. plotted = 52 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier UHRT
Number of obs. plotted = 60 Number of outliers = 2
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier UHVW
Number of obs. plotted = 66 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier UIAG
Number of obs. plotted = 45 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier UICO
Number of obs. plotted = 104 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
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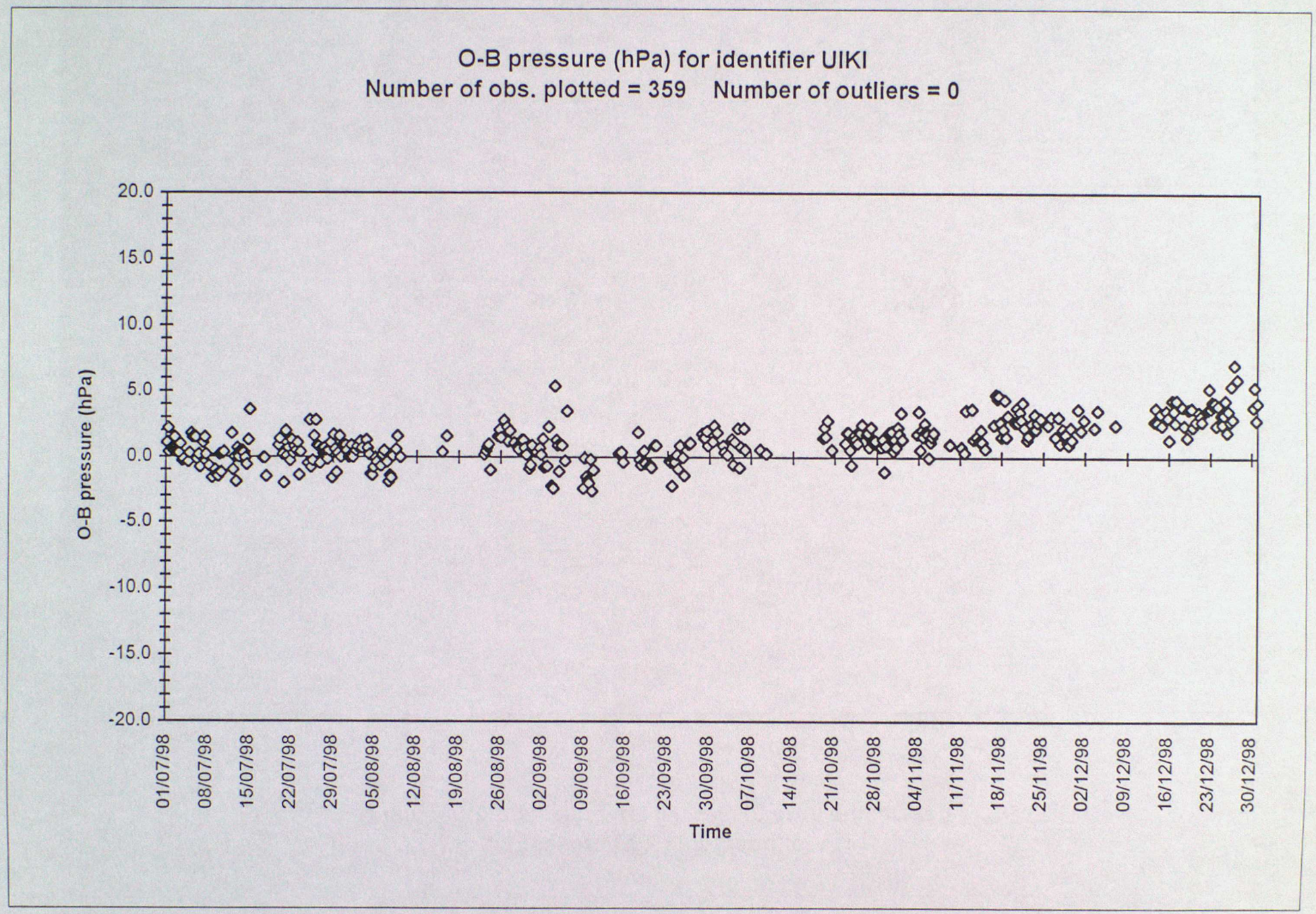
09/12/98
16/12/98
23/12/98
30/12/98


O-B pressure (hPa) for identifier UIKI
Number of obs. plotted = 359 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier UITJ
Number of obs. plotted = 83 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier UYPO
Number of obs. plotted = 62 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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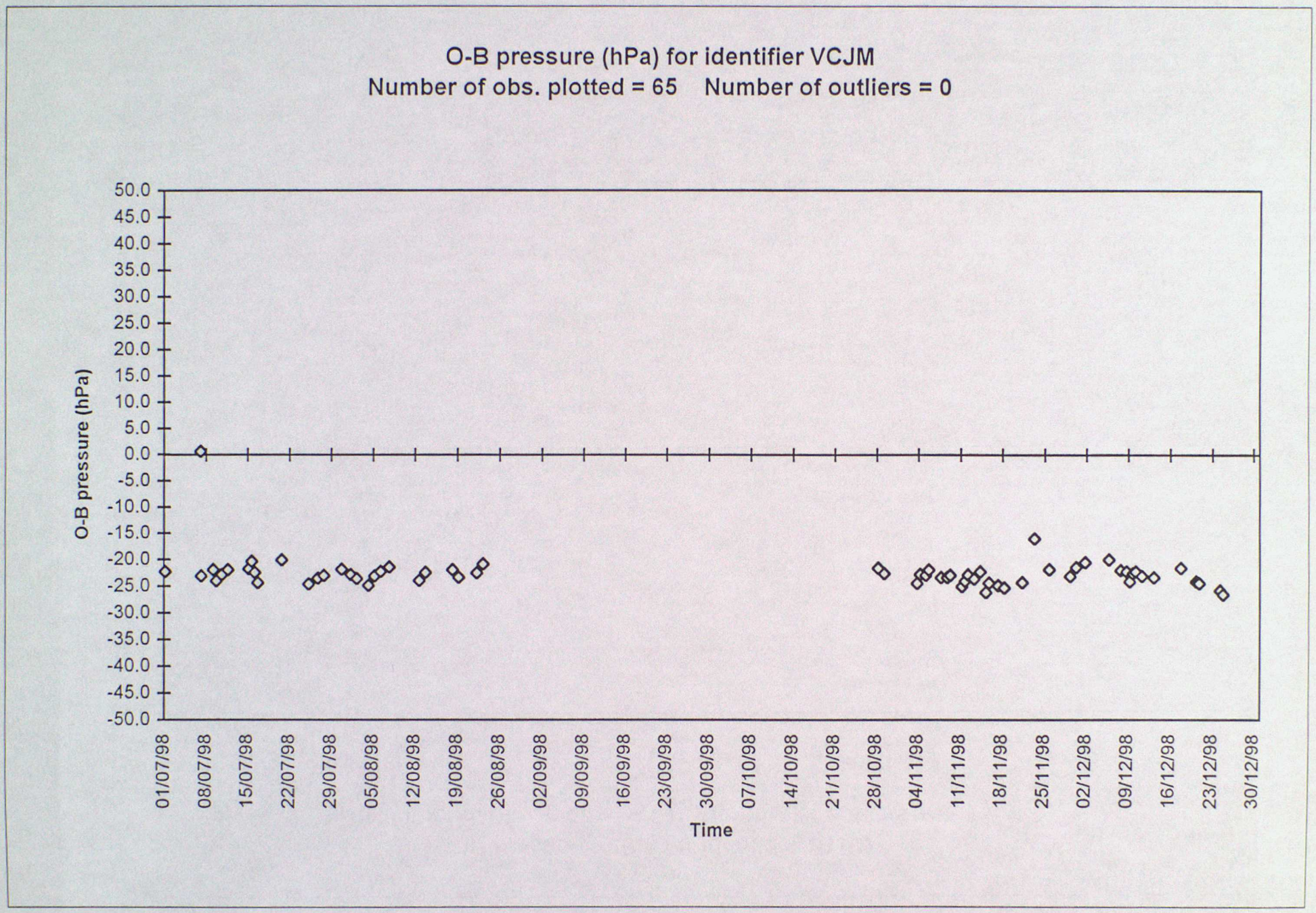
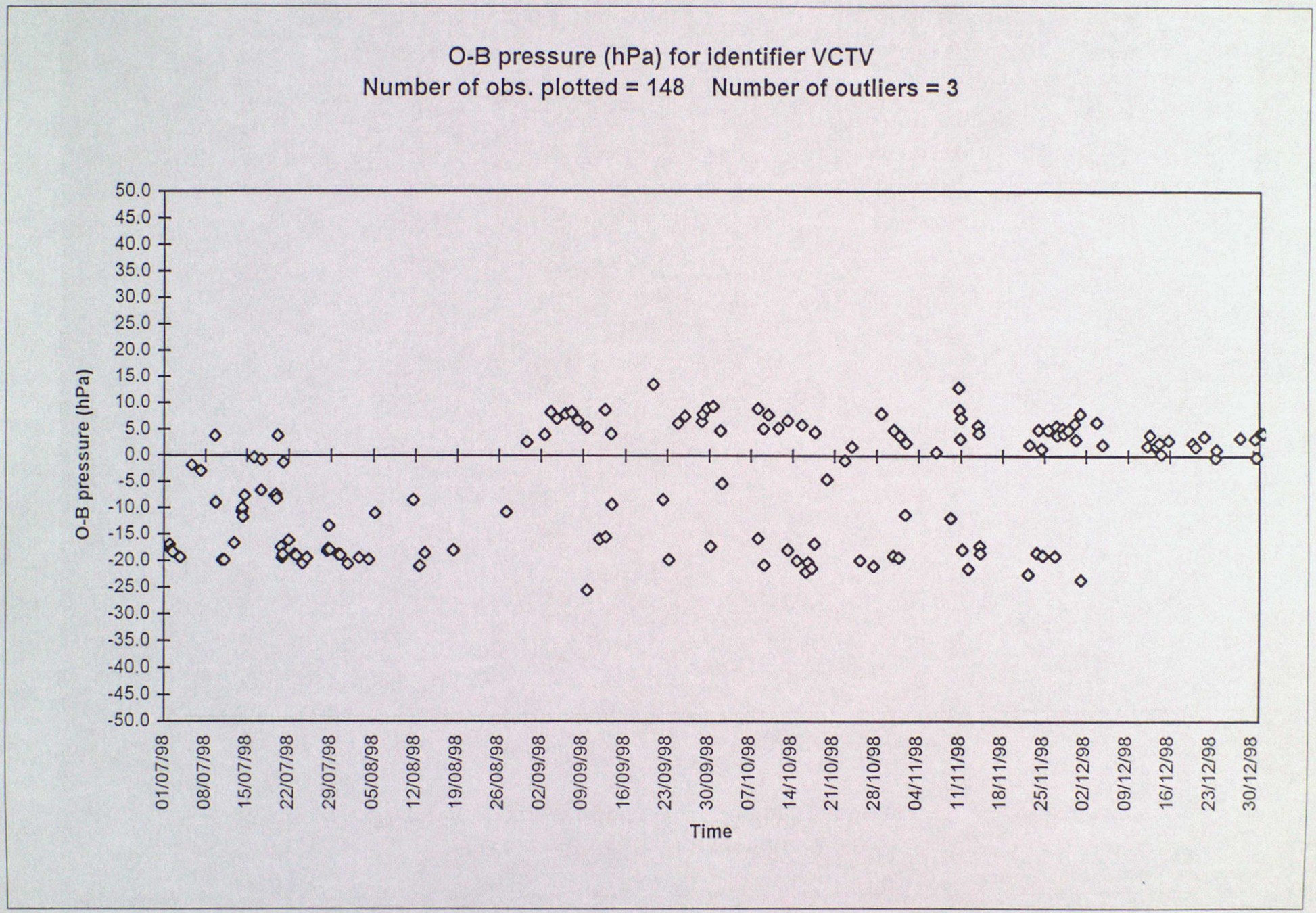
23/12/98
30/12/98


O-B pressure (hPa) for identifier VCJM
Number of obs. plotted = 65 Number of outliers = 0
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier VCTV
Number of obs. plotted = 148 Number of outliers = 3
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier VGDT
Number of obs. plotted = 44 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier VGJC
Number of obs. plotted = 80 Number of outliers = 1
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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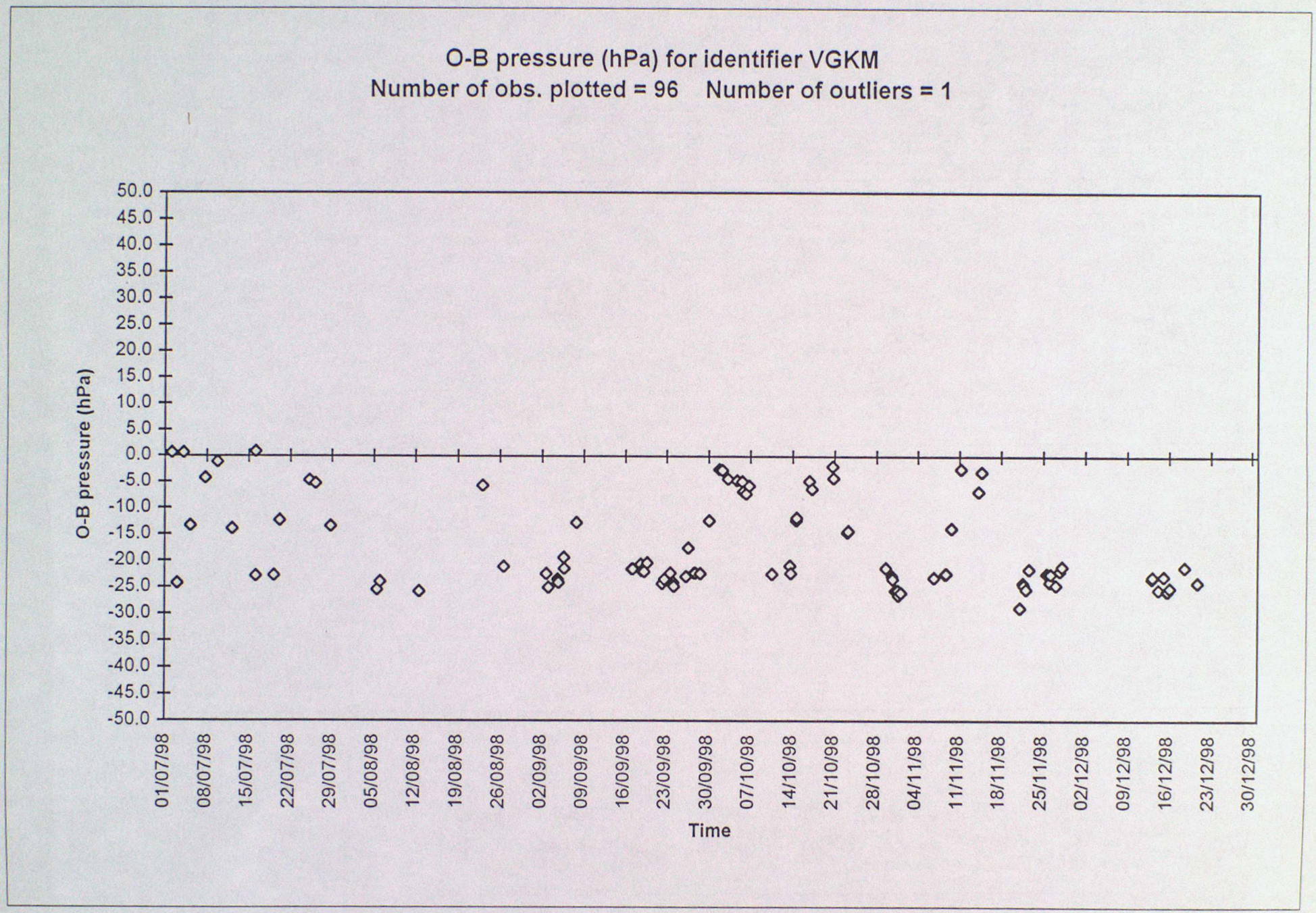
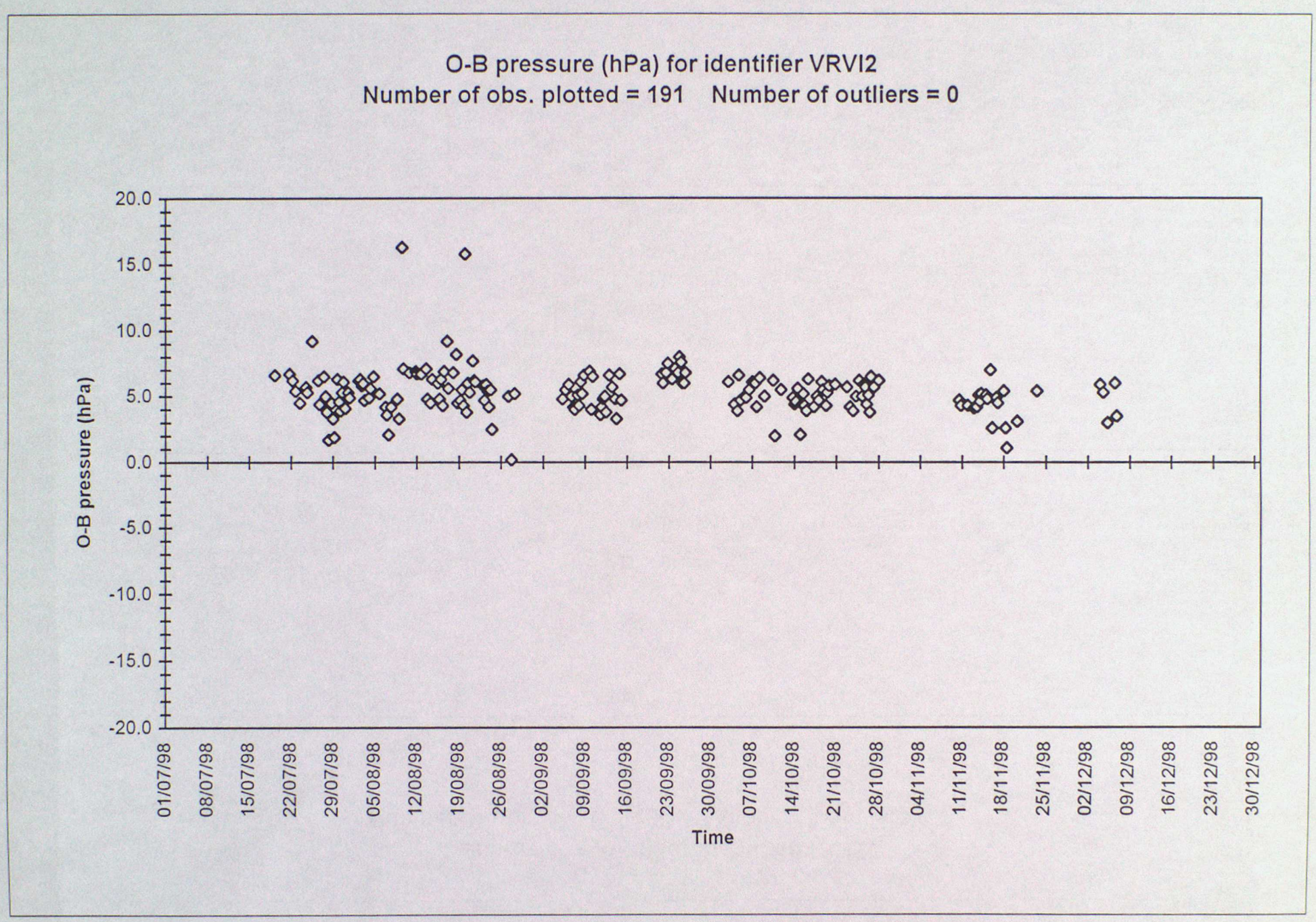
16/12/98
23/12/98
30/12/98

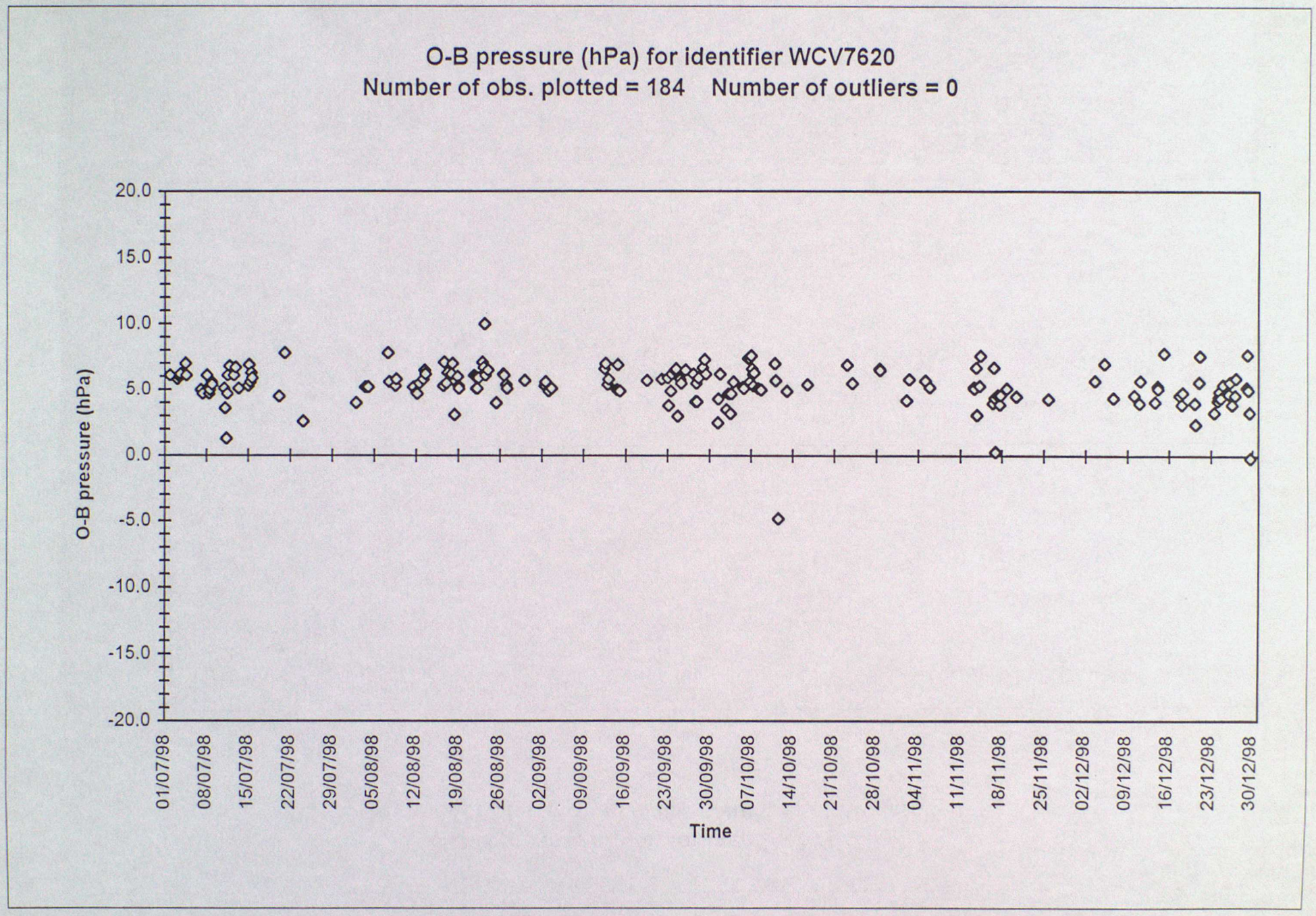

O-B pressure (hPa) for identifier VGKM
Number of obs. plotted = 96 Number of outliers = 1
O-B pressure (hPa)
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

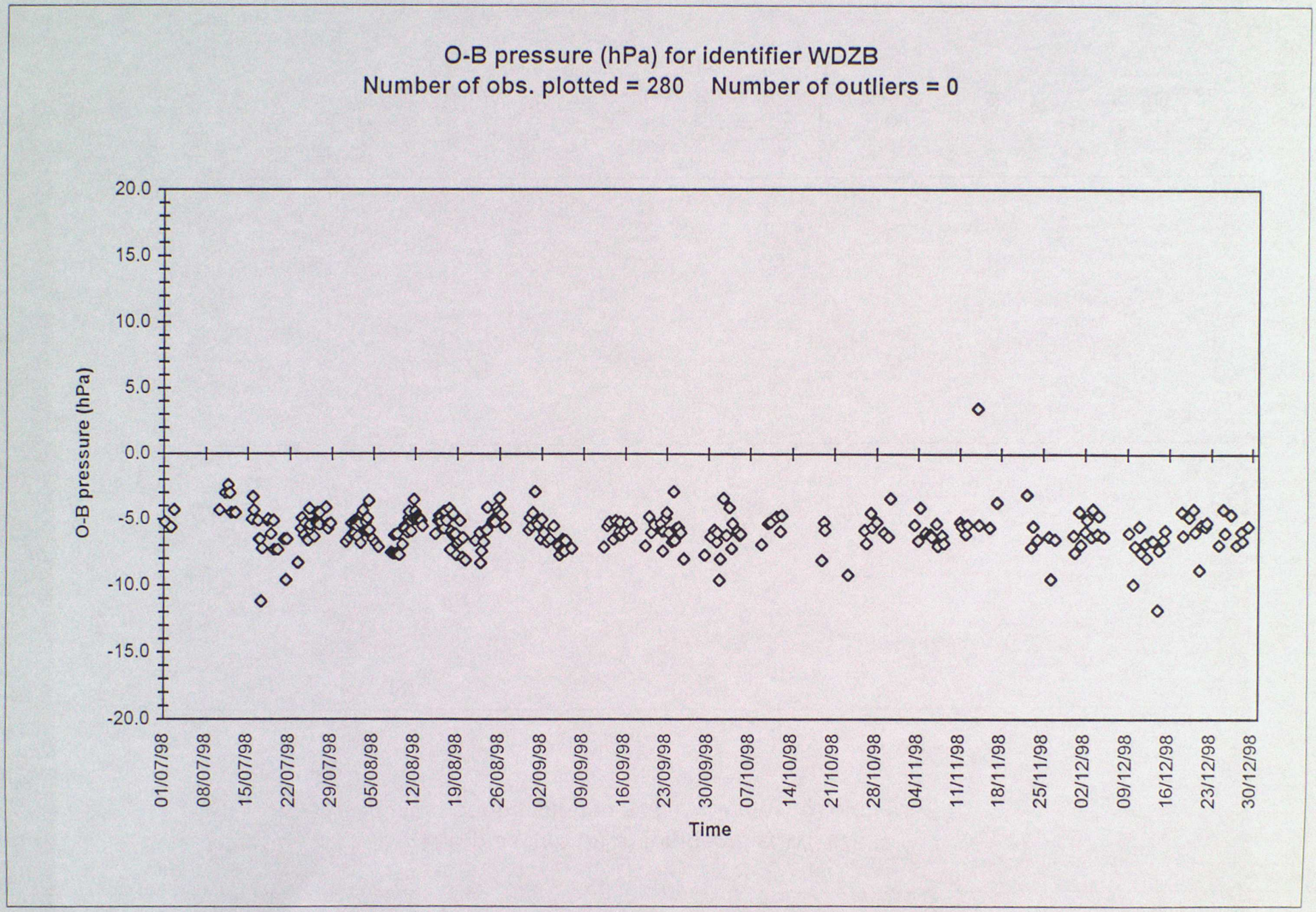
O-B pressure (hPa) for identifier VRUS7
Number of obs. plotted = 61 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

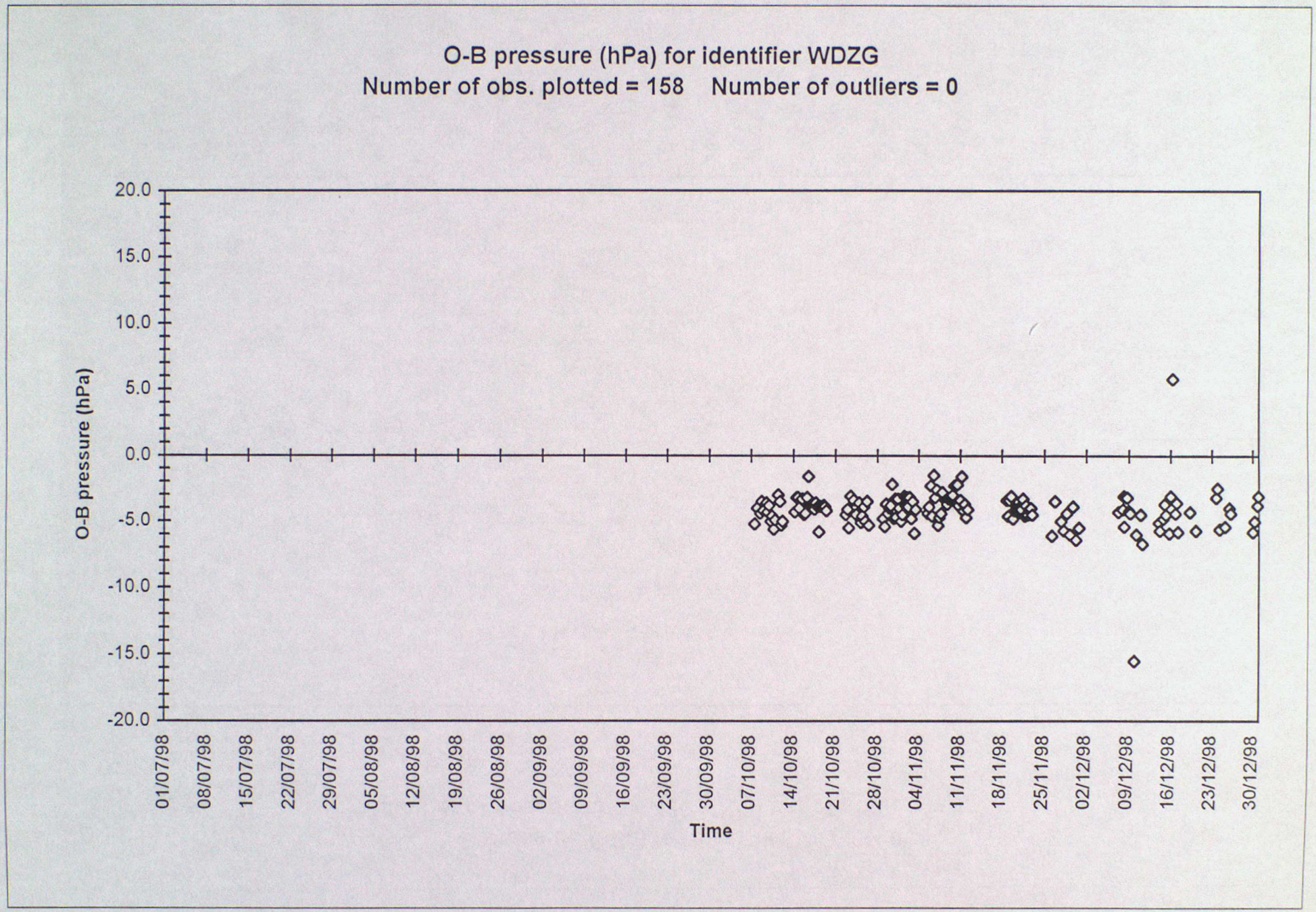

O-B pressure (hPa) for identifier VRVI2
Number of obs. plotted = 191 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

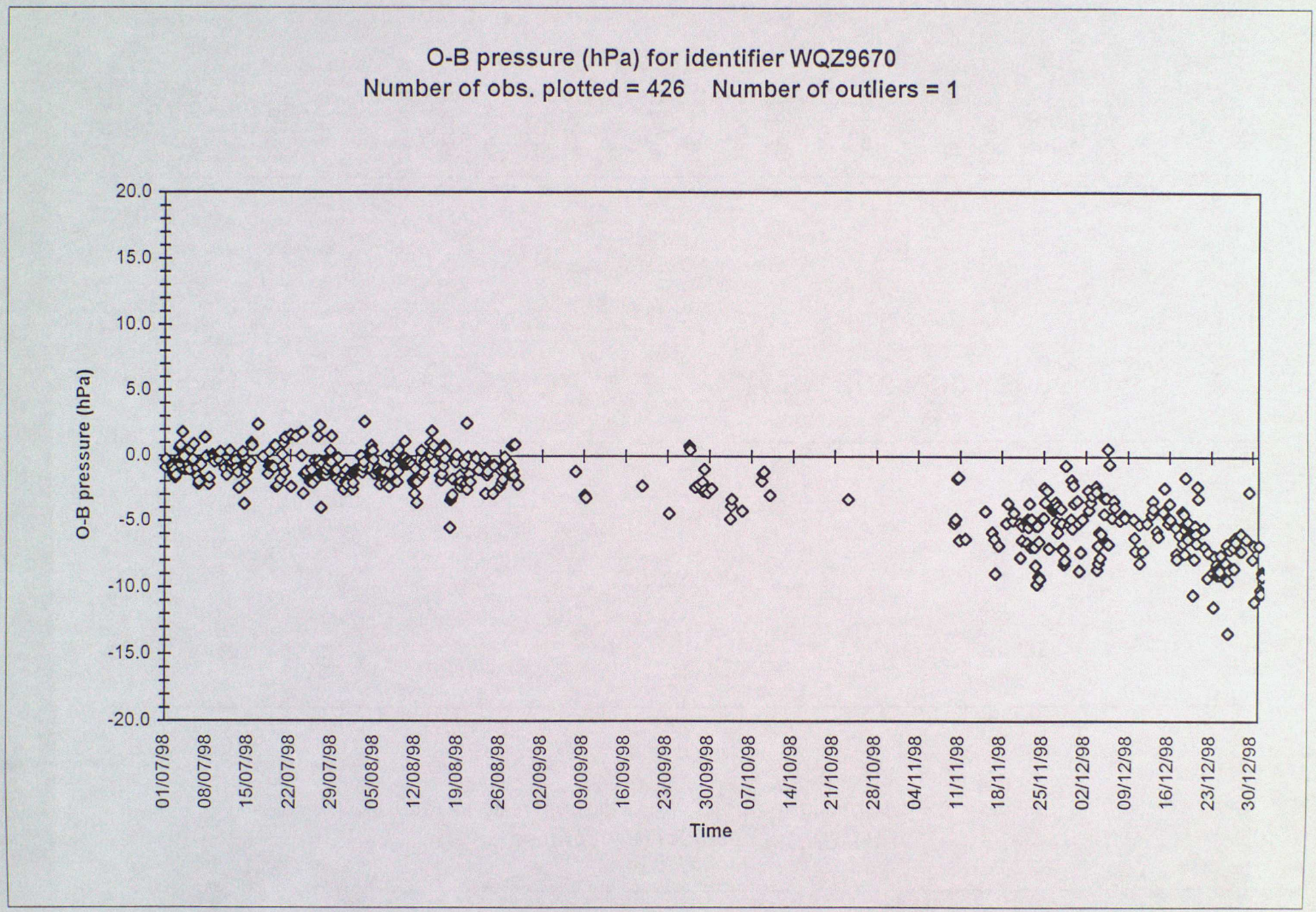
O-B pressure (hPa) for identifier VVKJ
Number of obs. plotted = 57 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B pressure (hPa) for identifier V2XO
Number of obs. plotted = 285 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98


O-B pressure (hPa) for identifier WCV7620
Number of obs. plotted = 184 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier WDZB
Number of obs. plotted = 280 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier WDZG
Number of obs. plotted = 158 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier WQZ9670
Number of obs. plotted = 426 Number of outliers = 1
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier 3FGN3
Number of obs. plotted = 112 Number of outliers = 2
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
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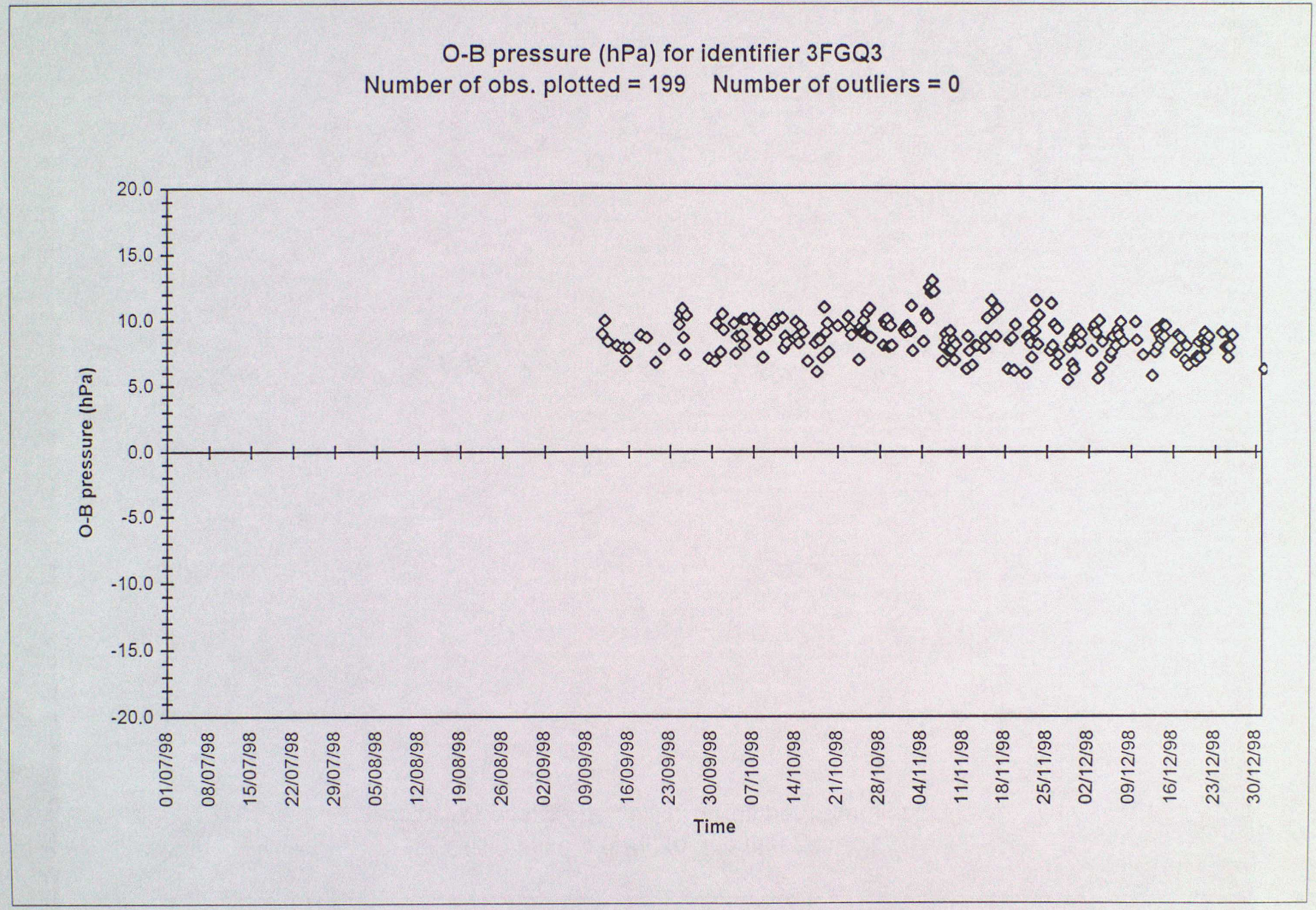
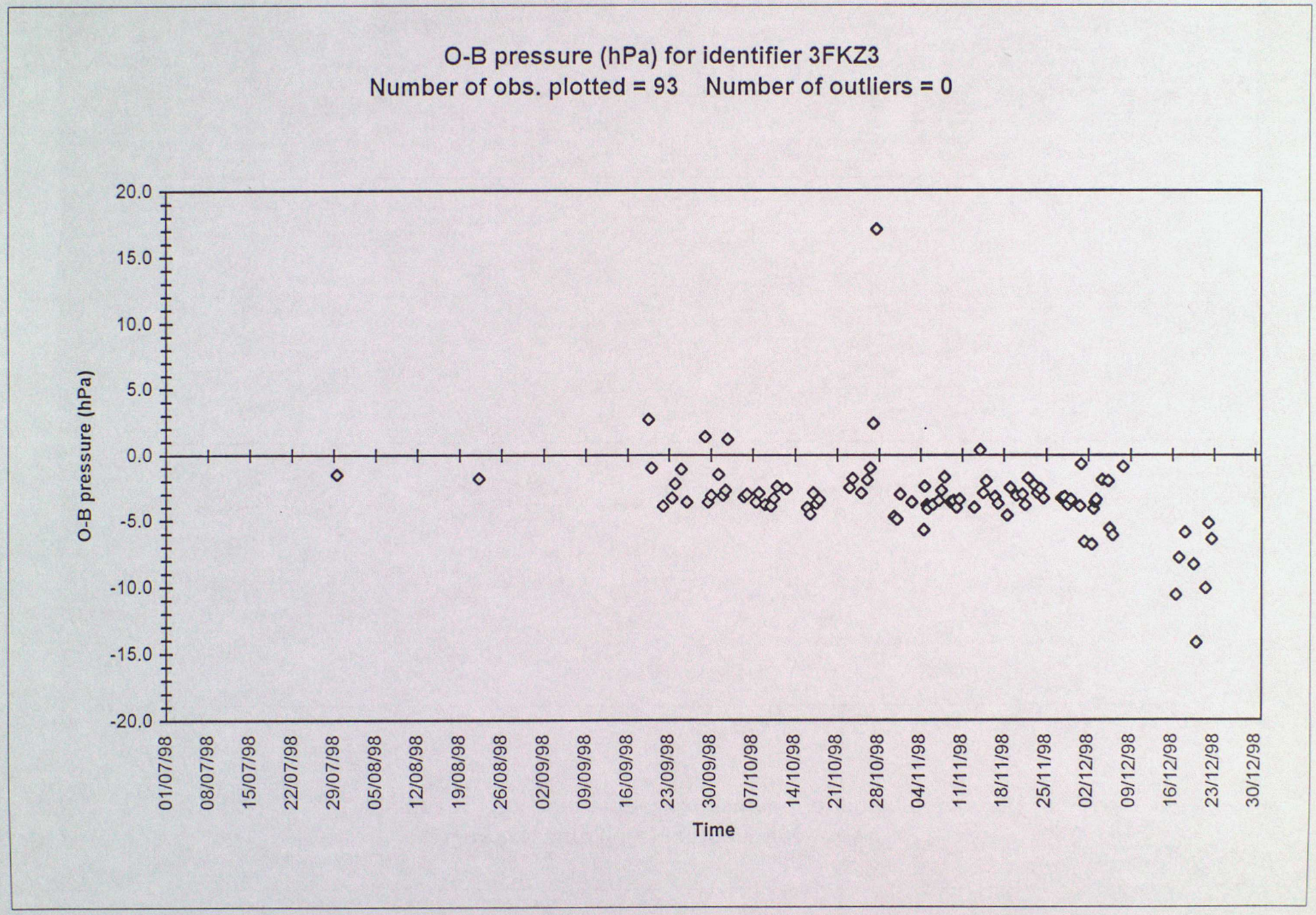
09/12/98
16/12/98
23/12/98
30/12/98


O-B pressure (hPa) for identifier 3FGQ3
Number of obs. plotted = 199 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier 3FKZ3
Number of obs. plotted = 93 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier 3FOW4
Number of obs. plotted = 293 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
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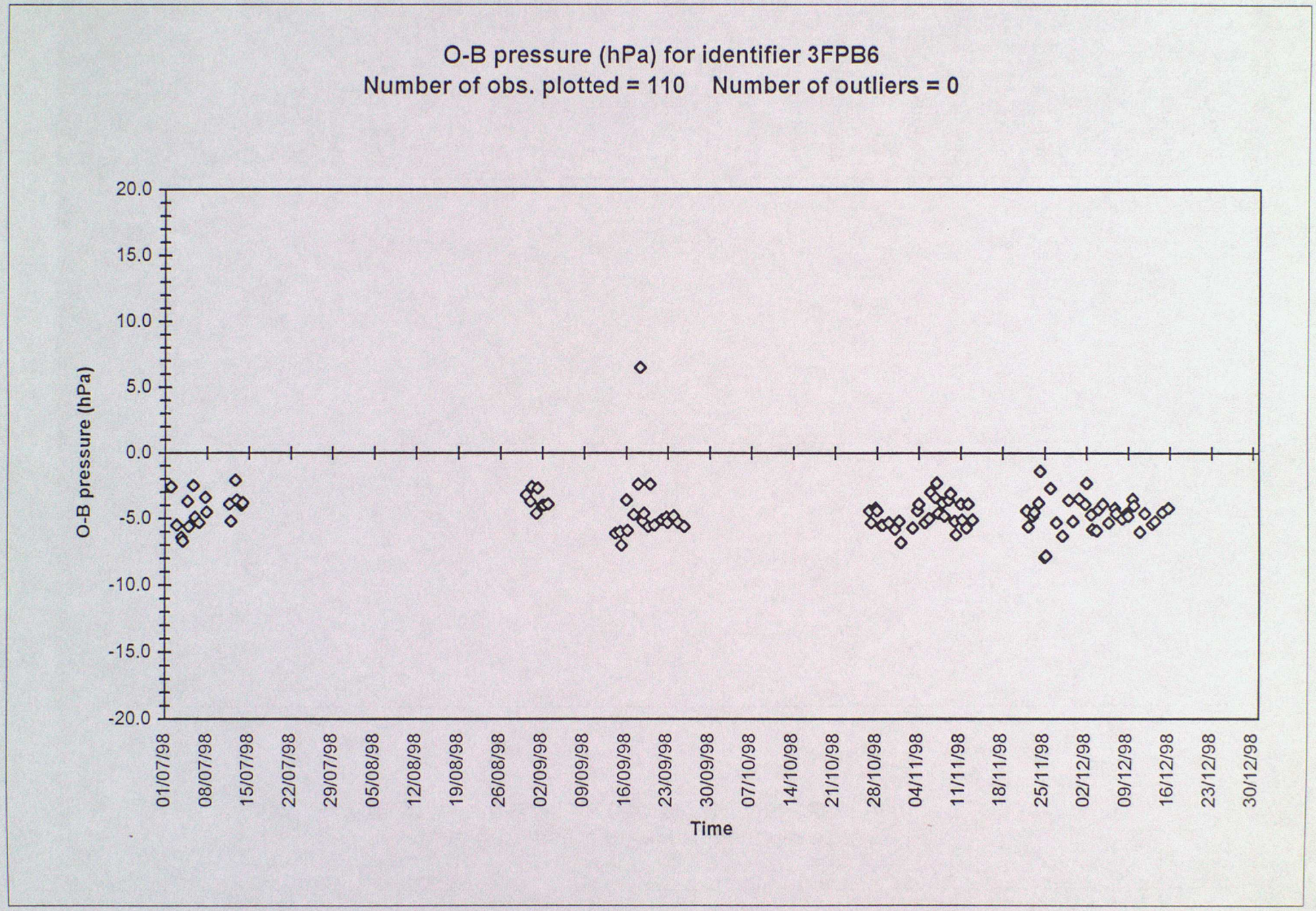
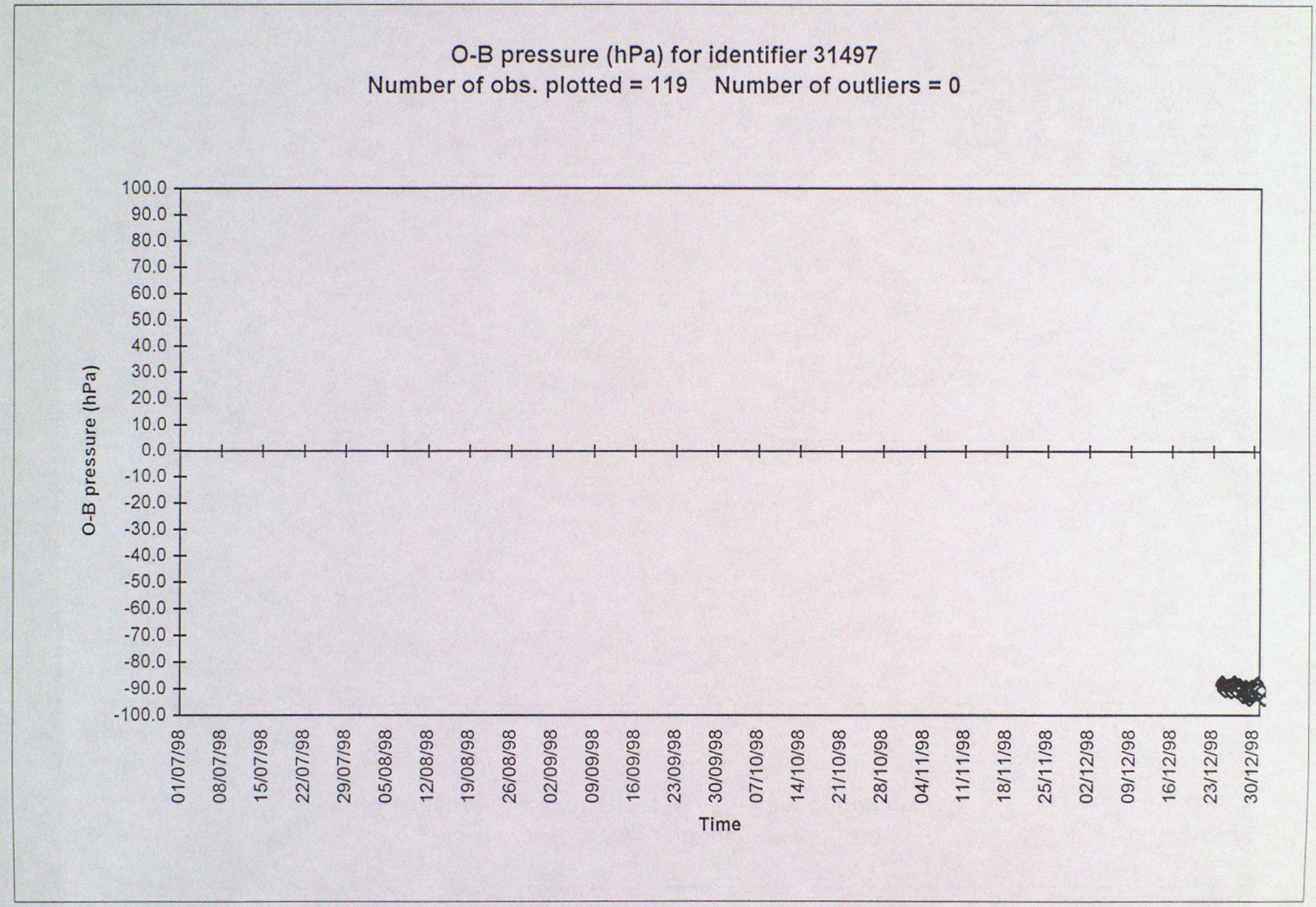
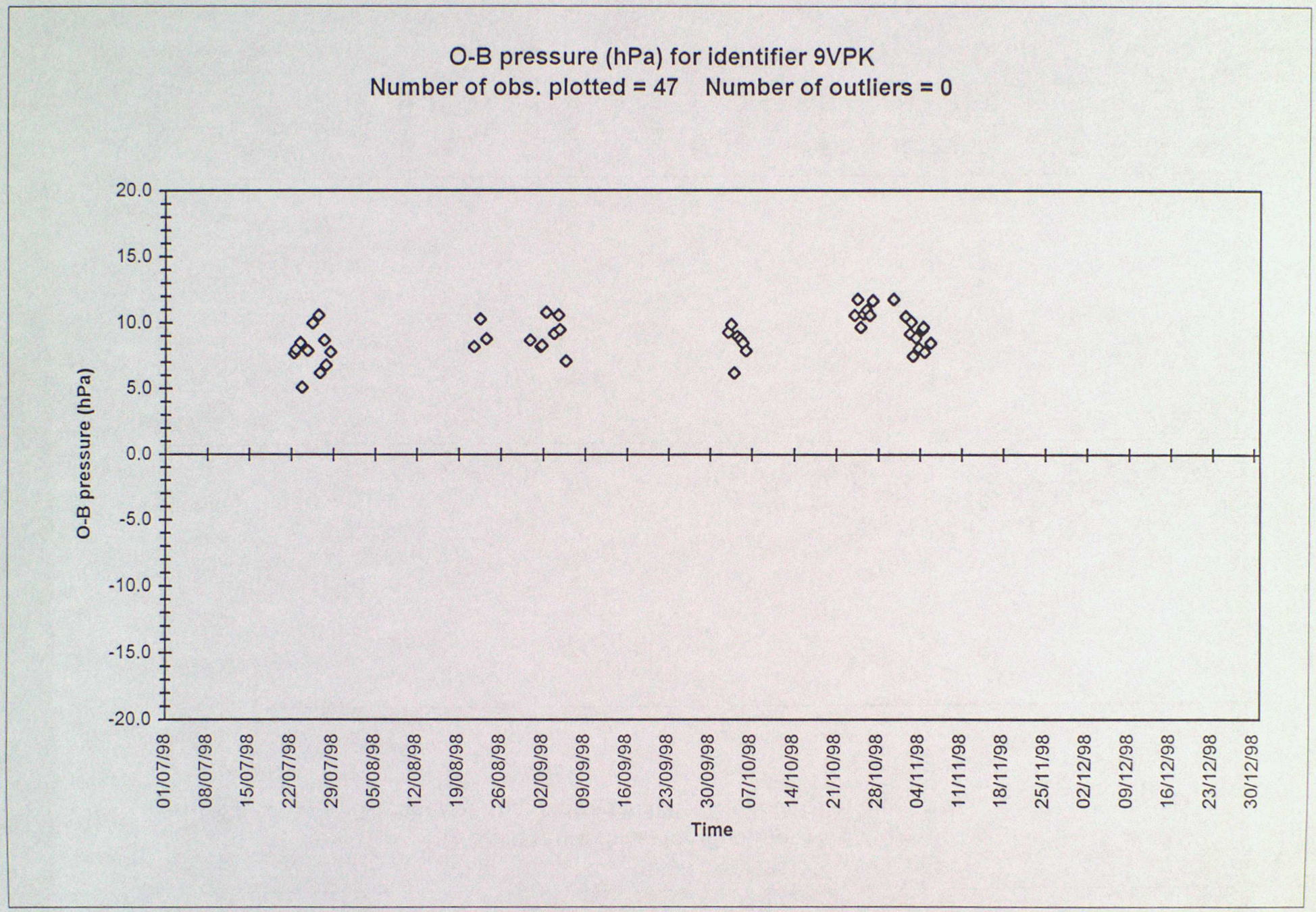
23/12/98
30/12/98


O-B pressure (hPa) for identifier 3FPB6
Number of obs. plotted = 110 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B pressure (hPa) for identifier 31497
Number of obs. plotted = 119 Number of outliers = 0
O-B pressure (hPa)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B pressure (hPa) for identifier 9MCM
Number of obs. plotted = 188 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98


O-B pressure (hPa) for identifier 9VPK
Number of obs. plotted = 47 Number of outliers = 0
O-B pressure (hPa)
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B wind speed (m s-1) for identifier 21531
Number of obs. plotted = 1512 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier 41626
Number of obs. plotted = 910 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier A9DG
Number of obs. plotted = 51 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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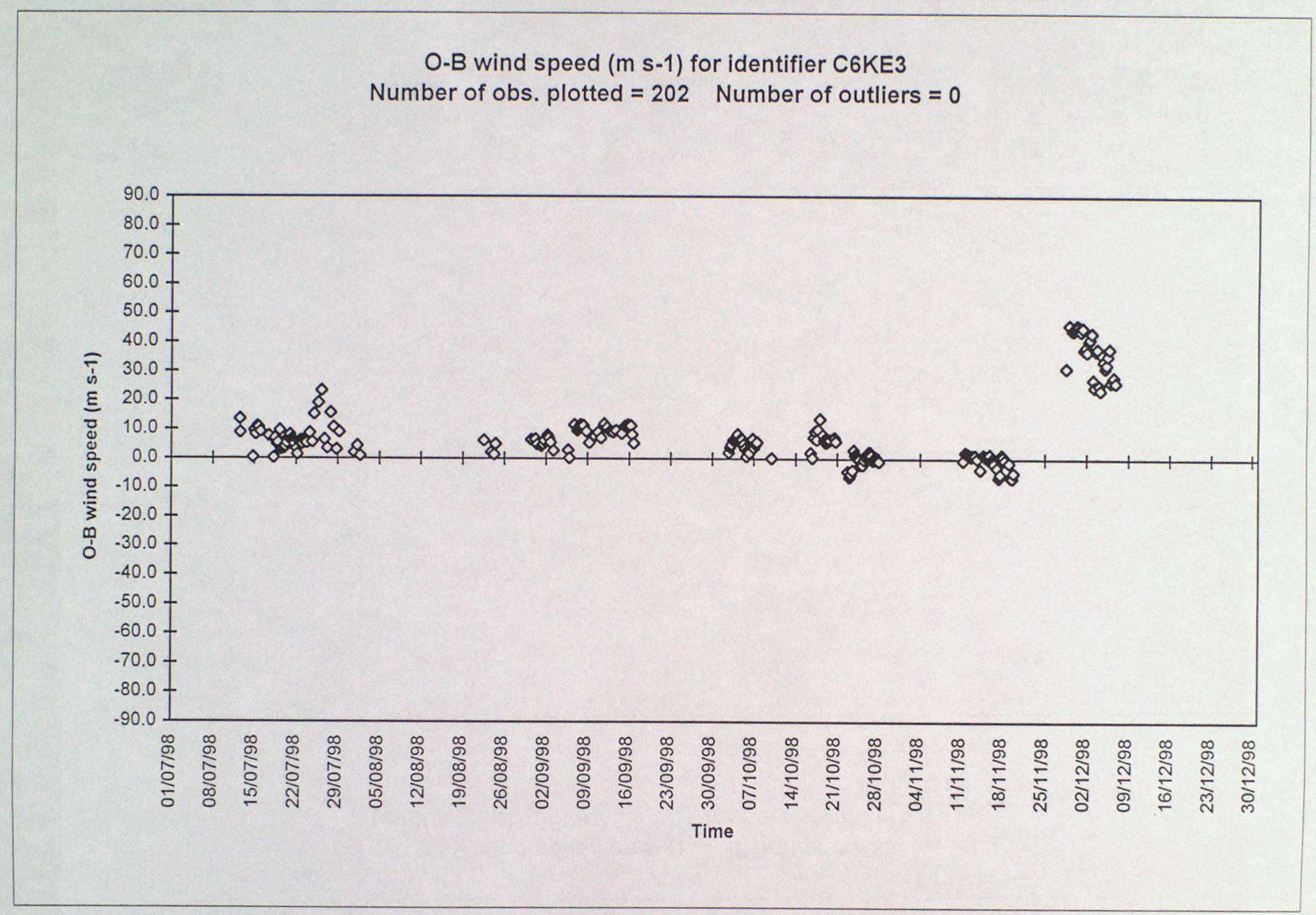
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98


O-B wind speed (m s-1) for identifier C6KE3
Number of obs. plotted = 202 Number of outliers = 0
O-B wind speed (m s-1)
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B wind speed (m s-1) for identifier C6LQ3
Number of obs. plotted = 150 Number of outliers = 5
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier C6NI3
Number of obs. plotted = 93 Number of outliers = 2
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier DATG
Number of obs. plotted = 168 Number of outliers = 1
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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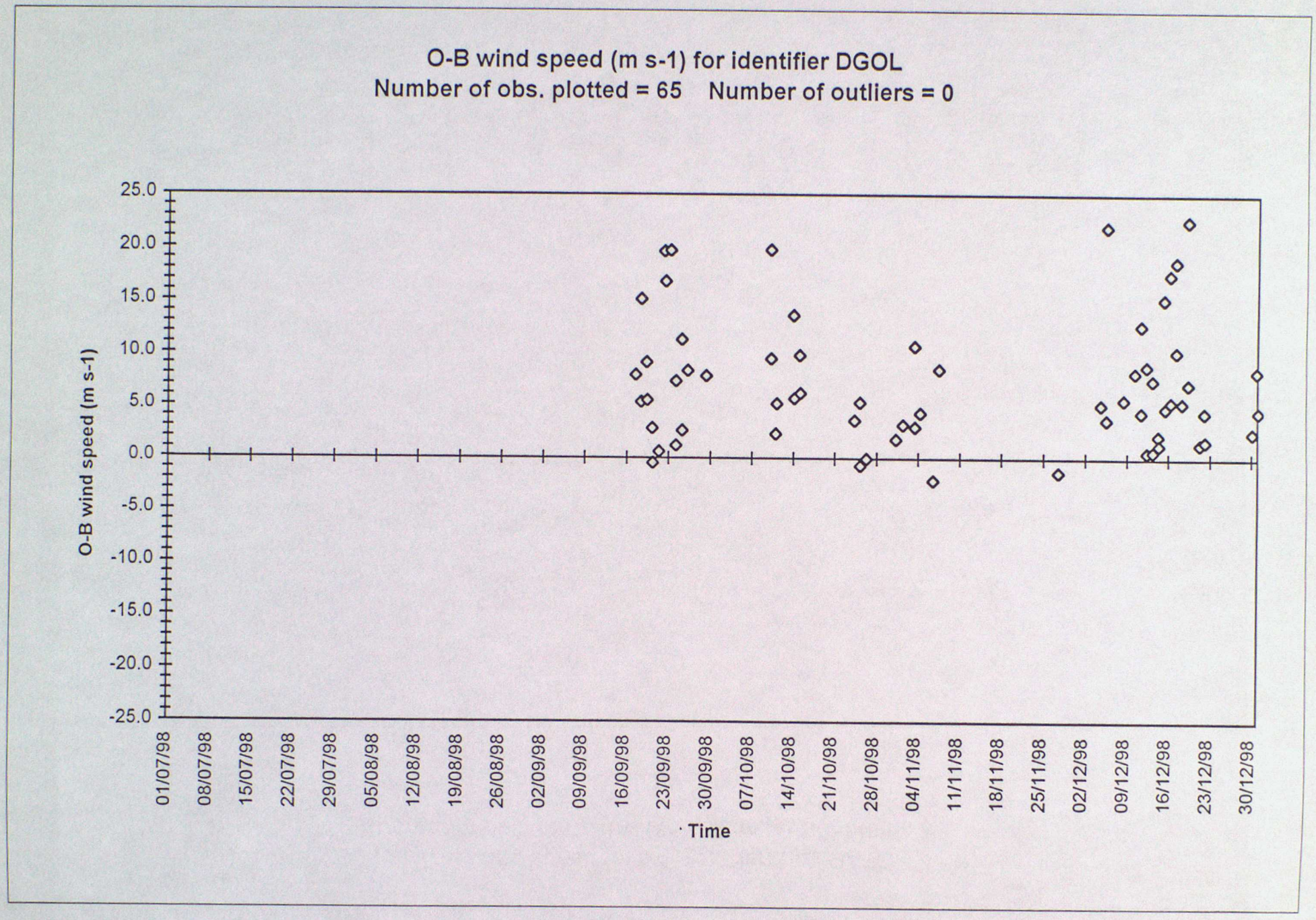
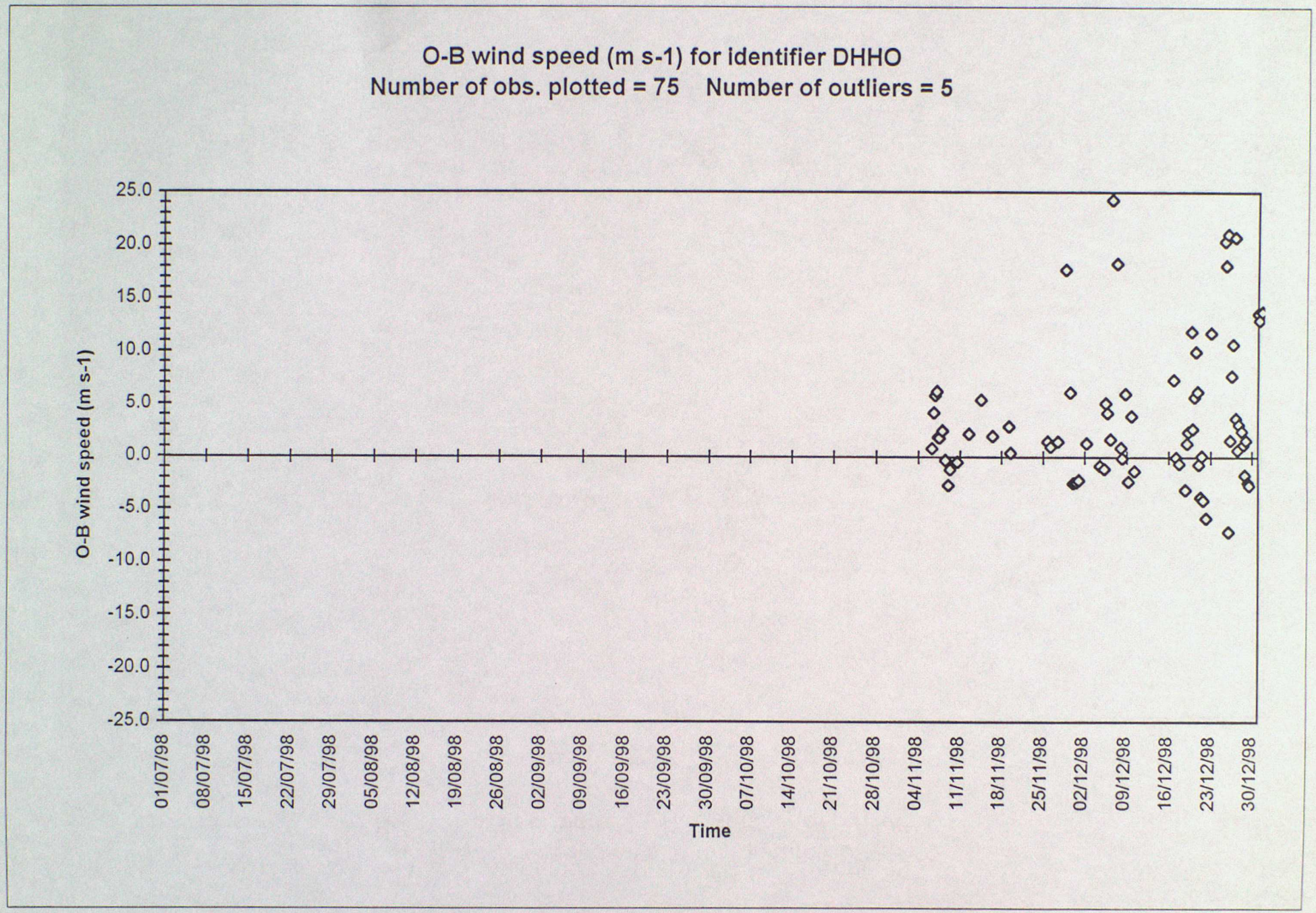
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98


O-B wind speed (m s-1) for identifier DGOL
Number of obs. plotted = 65 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B wind speed (m s-1) for identifier DHHO
Number of obs. plotted = 75 Number of outliers = 5
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B wind speed (m s-1) for identifier DPRH
Number of obs. plotted = 47 Number of outliers = 1
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier DZFF
Number of obs. plotted = 71 Number of outliers = 1
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier ELGG3
Number of obs. plotted = 89 Number of outliers = 5
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier ELJH9
Number of obs. plotted = 71 Number of outliers = 2
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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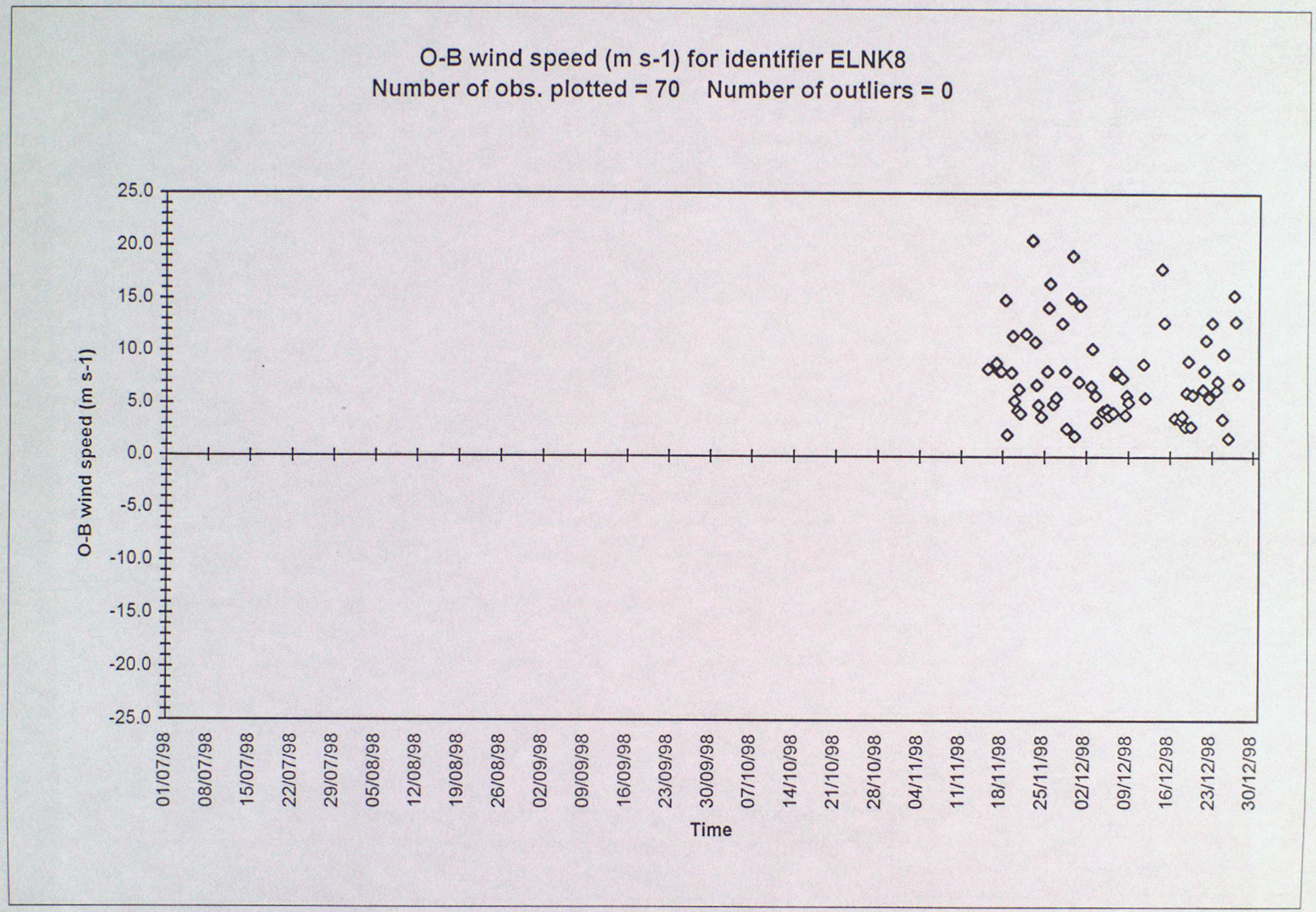
16/12/98
23/12/98
30/12/98


O-B wind speed (m s-1) for identifier ELNK8
Number of obs. plotted = 70 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B wind speed (m s-1) for identifier FNRV
Number of obs. plotted = 65 Number of outliers = 1
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier GFWX
Number of obs. plotted = 273 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier OUEK
Number of obs. plotted = 256 Number of outliers = 7
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
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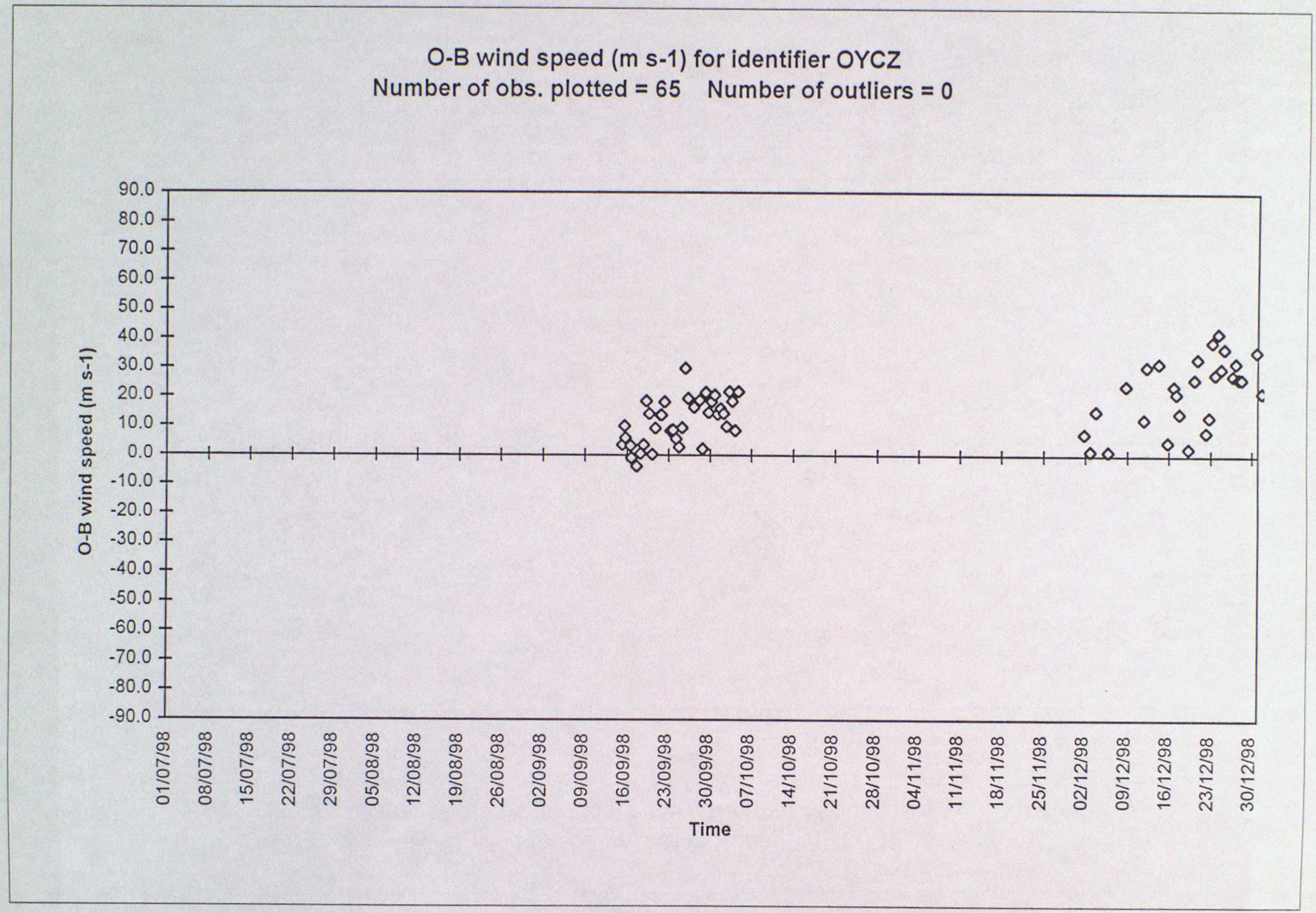
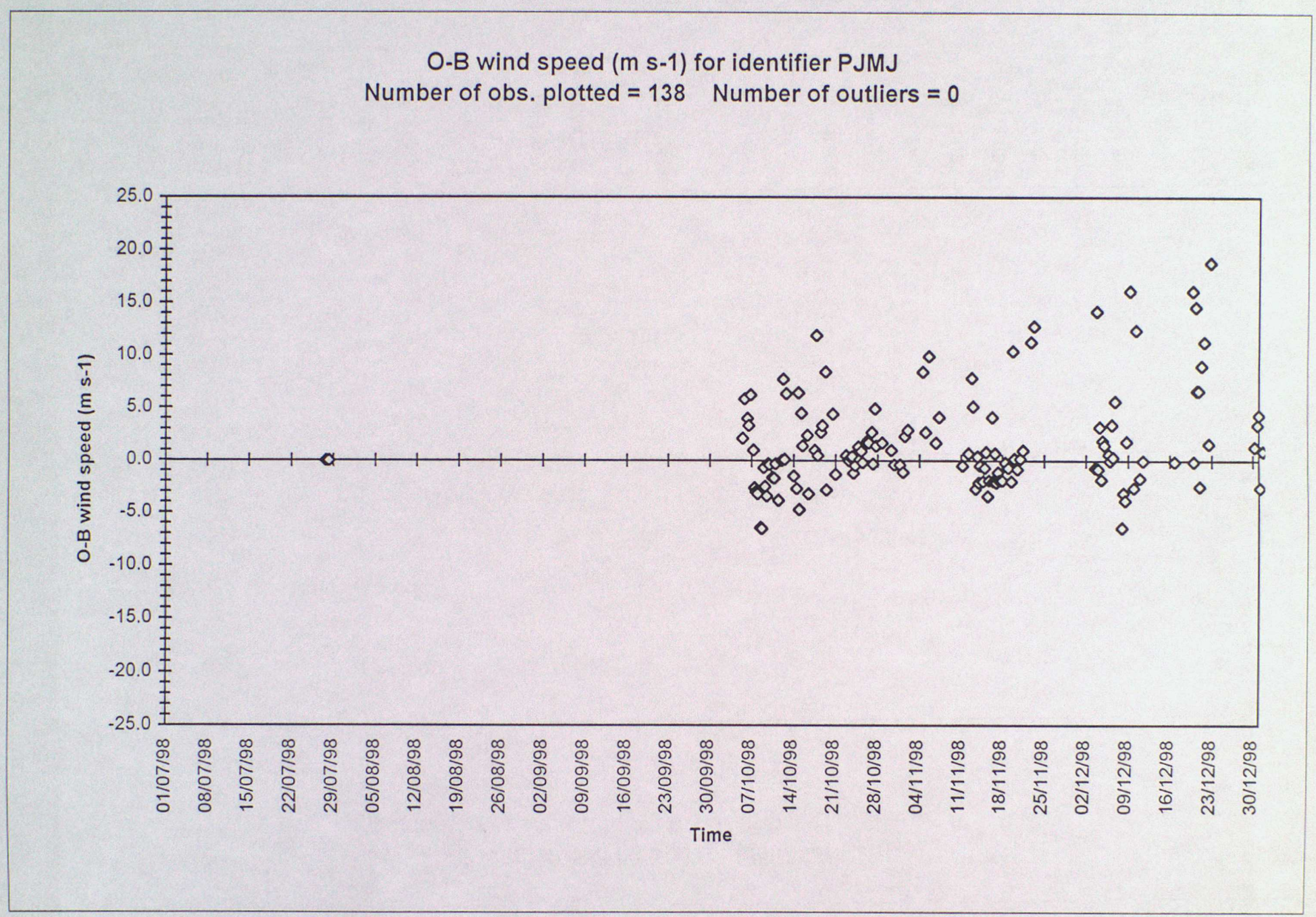
16/12/98
23/12/98
30/12/98


O-B wind speed (m s-1) for identifier OYCZ
Number of obs. plotted = 65 Number of outliers = 0
O-B wind speed (m s-1)
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B wind speed (m s-1) for identifier PCCZ
Number of obs. plotted = 101 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier PDTW
Number of obs. plotted = 104 Number of outliers = 1
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier PJED
Number of obs. plotted = 110 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98


O-B wind speed (m s-1) for identifier PJMJ
Number of obs. plotted = 138 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B wind speed (m s-1) for identifier PJOX
Number of obs. plotted = 283 Number of outliers = 5
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier S6DH
Number of obs. plotted = 60 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier 3FDO6
Number of obs. plotted = 34 Number of outliers = 11
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

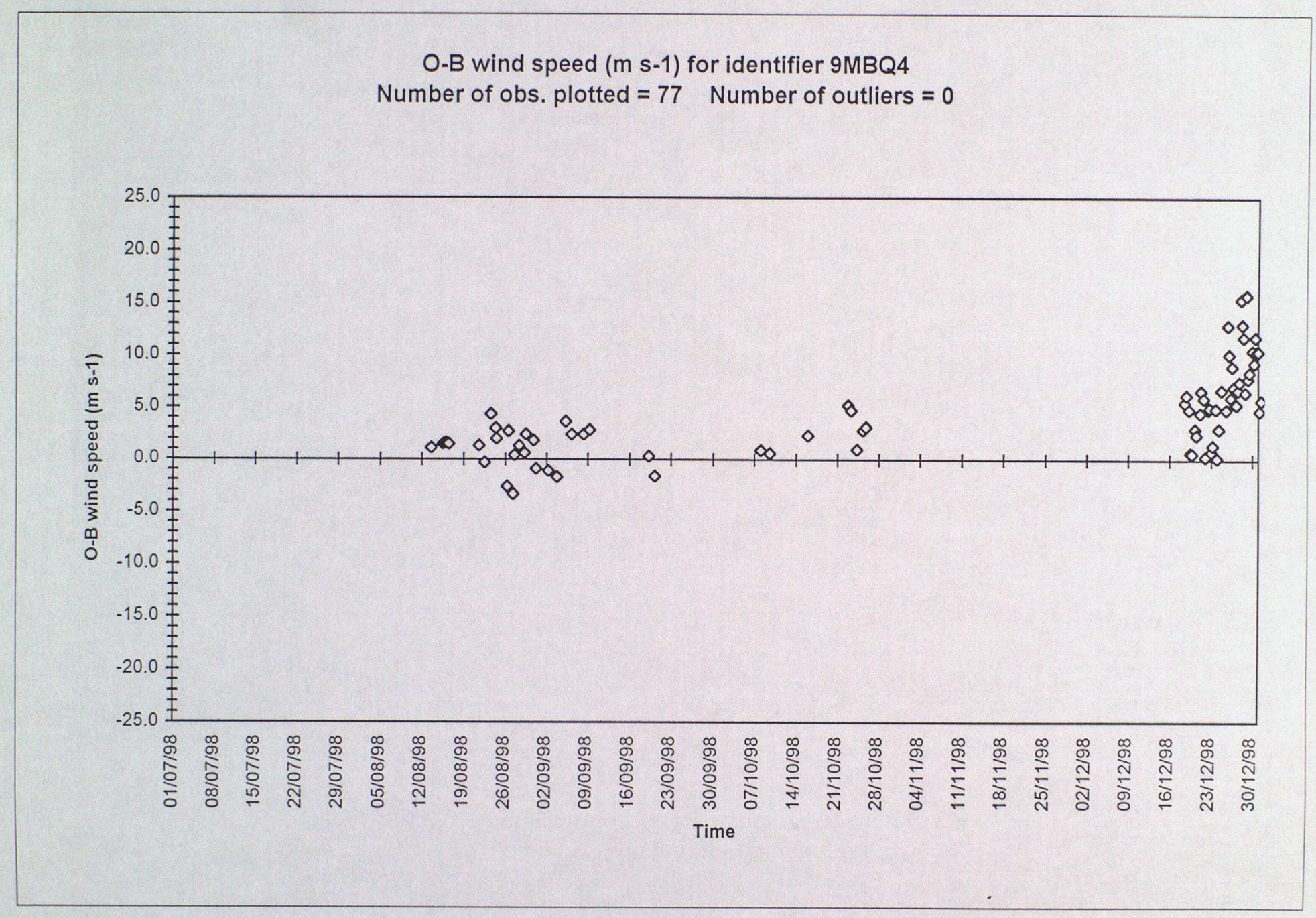
O-B wind speed (m s-1) for identifier 63113
Number of obs. plotted = 307 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

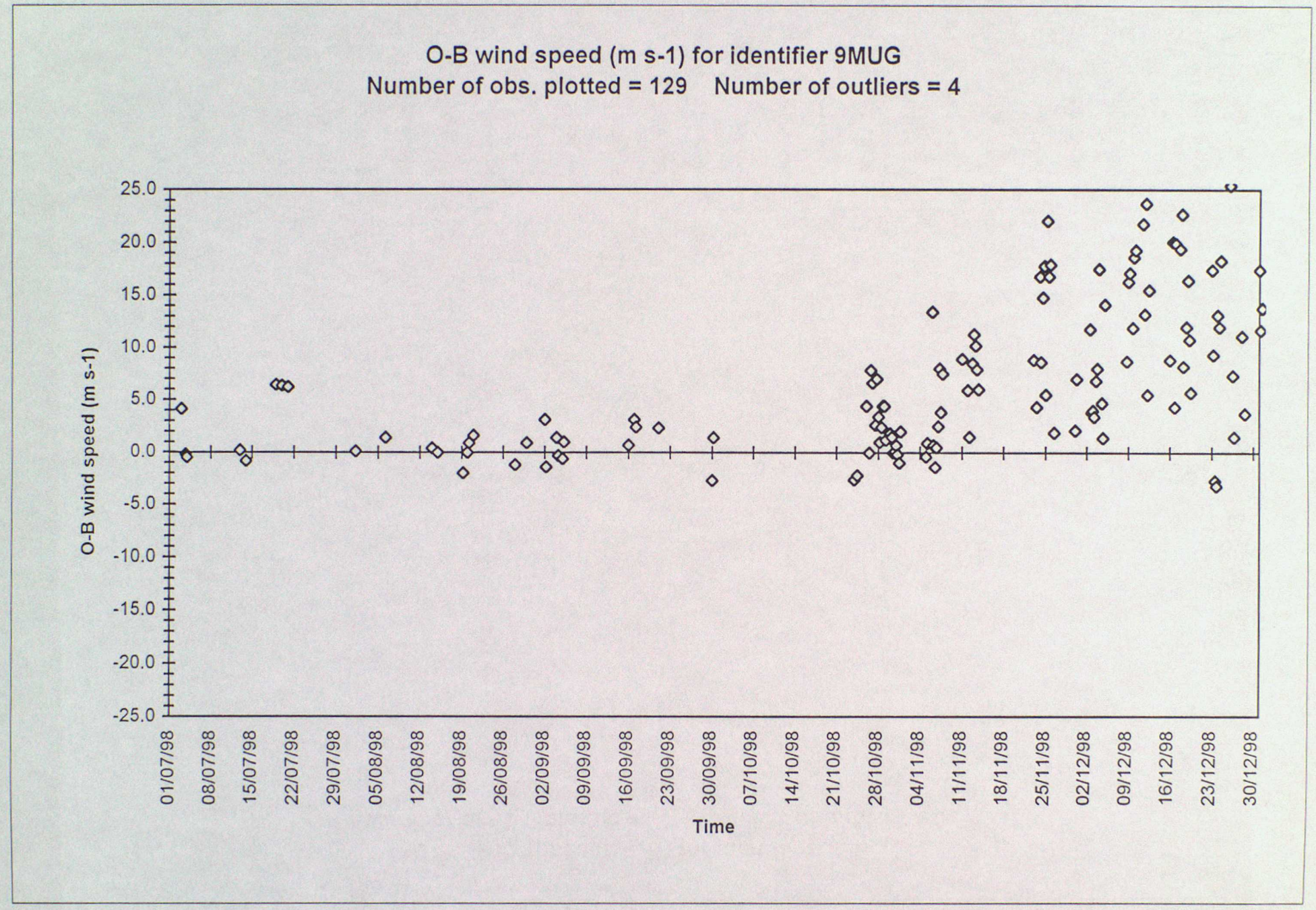
O-B wind speed (m s-1) for identifier 64045
Number of obs. plotted = 4042 Number of outliers = 1
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

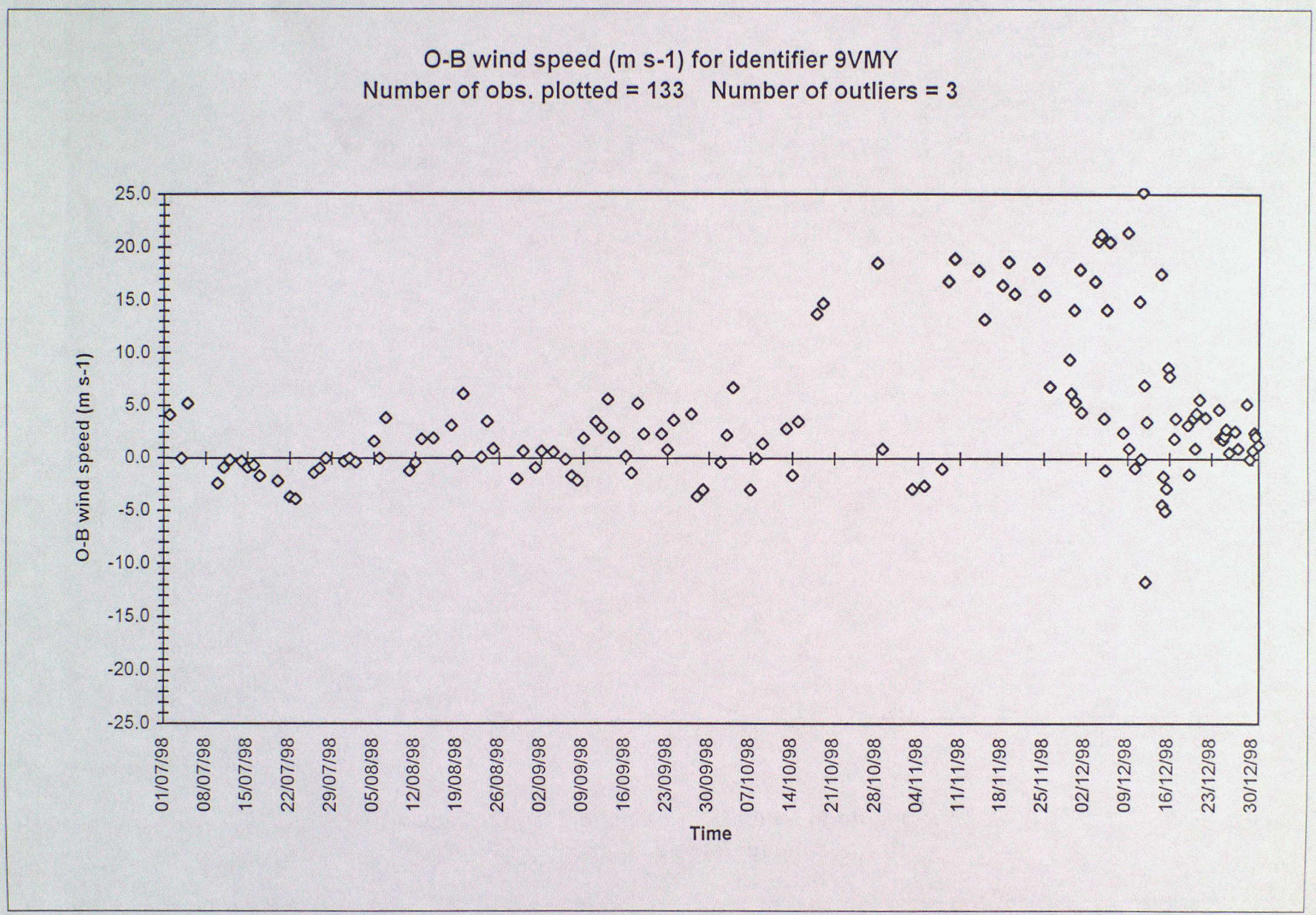
O-B wind speed (m s-1) for identifier 9KKF
Number of obs. plotted = 205 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier 9MBK
Number of obs. plotted = 40 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind speed (m s-1) for identifier 9MBK8
Number of obs. plotted = 71 Number of outliers = 1
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98


O-B wind speed (m s-1) for identifier 9MBQ4
Number of obs. plotted = 77 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B wind speed (m s-1) for identifier 9MUG
Number of obs. plotted = 129 Number of outliers = 4
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time


O-B wind speed (m s-1) for identifier 9VMY
Number of obs. plotted = 133 Number of outliers = 3
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B wind speed (m s-1) for identifier 9VVU
Number of obs. plotted = 81 Number of outliers = 0
O-B wind speed (m s-1)
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier 12506
Number of obs. plotted = 136 Number of outliers = 0
O-B wind direction (deg.)
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier 21531
Number of obs. plotted = 1095 Number of outliers = 0
O-B wind direction (deg.)
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier 52624
Number of obs. plotted = 808 Number of outliers = 0
O-B wind direction (deg.)
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier 55587
Number of obs. plotted = 3996 Number of outliers = 0
O-B wind direction (deg.)
180.0
170.0
160.0
150.0
140.0
130.0
120.0
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
-120.0
-130.0
-140.0
-150.0
-160.0
-170.0
-180.0
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier ELTQ5
Number of obs. plotted = 182 Number of outliers = 0
O-B wind direction (deg.)
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier GBSA
Number of obs. plotted = 158 Number of outliers = 0
O-B wind direction (deg.)
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier GVSN
Number of obs. plotted = 134 Number of outliers = 0
O-B wind direction (deg.)
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier LAKW2
Number of obs. plotted = 87 Number of outliers = 0
O-B wind direction (deg.)
180.0
170.0
160.0
150.0
140.0
130.0
120.0
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
-120.0
-130.0
-140.0
-150.0
-160.0
-170.0
-180.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98
Time

O-B wind direction (deg.) for identifier UCMR
Number of obs. plotted = 126 Number of outliers = 0
O-B wind direction (deg.)
Time
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier 3FFF8
Number of obs. plotted = 80 Number of outliers = 0
O-B wind direction (deg.)
Time
180.0
170.0
160.0
150.0
140.0
130.0
120.0
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
-110.0
-120.0
-130.0
-140.0
-150.0
-160.0
-170.0
-180.0
01/07/98
08/07/98
15/07/98
22/07/98
29/07/98
05/08/98
12/08/98
19/08/98
26/08/98
02/09/98
09/09/98
16/09/98
23/09/98
30/09/98
07/10/98
14/10/98
21/10/98
28/10/98
04/11/98
11/11/98
18/11/98
25/11/98
02/12/98
09/12/98
16/12/98
23/12/98
30/12/98

O-B wind direction (deg.) for identifier 46053

Number of obs. plotted = 413 Number of outliers = 0